South Hamblen County Vol. Fire Dept.

Advertisement for Bids

Project Number: 16103

Owner: Hamblen County

Hamblen County Department of Finance is hereby soliciting sealed bids for the following items: Fire Engine under the Community Development Block Grant program. Separate sealed bids will be accepted until 8/22/24 at 3:00 pm which time they will be opened and read aloud. All bids must be inclusive of all delivery and handling charges. Hamblen County reserves the right to reject any and all bids. Bid quotes must be effective for 60 days after the bid opening date. Further, the county reserves the right to contact the successful bidder for one full calendar year from the award date to determine if the successful bidder is willing to provide the same materials or services at the original bid price. All bidders submitting bids are required to present ALL the required vendor information, defined in the project specifications, as accompanying information to their bid submittal, regardless if these documents have been submitted in previous solicitations, in order for their bid submitted to be considered a valid bid. For specifications and more information contact Chris Bell, cbell@co.hamblen.tn.us or Mitch Loomis, mloomis@etdd.org. This project is funded under a grant contract with the State of Tennessee.

Please send bid quotes to Hamblen County Mayor's Office, Attn: Barbara Horton, Hamblen County Courthouse 511 West Second North Street, Morristown, TN. 37814. All bid envelopes must be noted on the outside of envelope as 2023 CDBG, South Hamblen County Fire Engine.

INFORMATION FOR BIDDERS

1. Bidding Terms:

Hamblen County (herein called the "Owner"), invites bids on the form attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the Owner at the finance department and then at said office publicly opened and read aloud. The envelopes containing the bids must be sealed, addressed to Attn: Barbara Horton, Hamblen County Courthouse, Mayor's Office, 511 West Second North Street, Morristown, TN. 37814 and designated as bid for 2023 CDBG, South Hamblen County Fire Engine.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 60 days after the actual date of the opening thereof.

The information contained in this document will reference the minimum specifications for the purchase of one (1) or more custom-built fire and/or rescue apparatus as detailed below. Proposals that are submitted shall reference only one (1) apparatus to avoid any confusion with the number of items or equipment that may be included in the event that multiple units of this vehicle are to be purchased.

2. Responsibility of Bidder:

In order to closely evaluate all bids and determine the responsiveness to the customer request. All proposals submitted for consideration shall be formatted in the same layout and same order as the bid specifications for ease of comparison. Any bid proposal that is not presented in this exact order and format will be rejected and excluded for future consideration. Those items that are different by brand, model number (when applicable), and operational performance must be clearly defined and listed separately on a document clearly identified as "Clarifications and Substitutions". Vendors failing to comply with this request are subject to immediate rejection without further cause. (NO EXCEPTIONS)

All equipment in the bid must meet or exceed the OWNERS specifications and must meet all applicable State and Federal regulations. All bidders submitting bids are required to present the required vendor information as accompanying information to their bid submittal, regardless if these documents have been submitted in previous solicitation.

South Hamblen County Vol. Fire Dept.

All of these items must be included with this bid submittal in order for the bid submitted to be considered a valid bid.

a. Each bidder shall either check "YES" or "NO" on each section.
b. All sections that receive a "YES" checkmark shall follow the specification precisely as it has been provided in the bid specifications.
c. All sections that receive a "NO" checkmark must be accompanied by an explanation in the vendor provided exceptions page attached to the end of their proposal.
d. All attached certifications need to be filled out and signed.

All bid proposals shall be valid for a period of no less than 60 calendar days from the bid opening date and shall not be withdrawn. The Department reserves the right to reject any and all bids that do not satisfy these requirements and do not meet the specific needs of the Department.

The following minimum specifications are intended to cover this particular brand new (never used) custom-built apparatus and the latest productions of design of this unit.

Any bidder who does not follow the requirements of these bid specifications shall be considered non- responsive and shall be disqualified for further consideration.

Each bidder shall include one original copy of their proposal and one set of CAD drawings with their bid proposal.

The final preparations for this apparatus shall be constructed entirely within the Continental United States utilizing every American made material or product available at time of production to meet the specifications of the Department.

Each bidder shall submit their information on the required "BIDDER INFORMATION FORM" found attached to this document. Any bidder who does not complete the required information and includes this form with their bid proposal shall be considered non-responsive and shall be disqualified for further consideration.

Each subsequent section of the bid specifications shall contain a check box for each bidder to identify whether or not they comply 100% with the specification as it has been provided by the Department.

3. Responsibility of the Owner:

The OWNER reserves the right to reject any and all bids.
The OWNER may not negotiate with any one Bidder to reduce or alter the stated bid.
Should the bids have to be thrown out for whatever reason a mini rebid will be held with the parties that submitted original bids, unless only one bid is received, and the State requires additional bids.
The OWNER agrees to provide written NOTICE of AWARD OF BID within 15 calendar days of the date of the bid opening.

4. Method of Bidding:

If delivered by mail, the bid proposal shall be sealed inside a second interior envelope that is clearly marked "2023 CDBG, South Hamblen County Fire Engine". Any bidder who does not have the envelope clearly marked as requested shall be considered non-responsive and shall be disqualified for further consideration.

If forwarded by mail, the sealed envelope must be enclosed in another envelope addressed to:

Attn: Barbara Horton, Hamblen County Courthouse,
County Mayor's Office
511 West Second North Street, Morristown, TN. 37814.

5. Qualification of Bidder:

The Owner may make such investigations as he/she deems necessary to determine the ability of the bidder to provide the equipment being requested and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the owner that such

bidder is properly qualified to carry out the obligations of the contract to provide the material within a timely fashion. Conditional bids will not be accepted.

6. Bid Security:

No bid bond or certified check will be required for the submittal of the bid.

7. Addenda and Interpretations:

No interpretation of the meaning of the specifications or other pre-bid documents will be made to any bidder orally.

Every request for such interpretation should be in writing addressed to Attn: Chris Bell, Hamblen County Courthouse 511 West Second North Street, Morristown, TN. 37814. and to be given consideration must be received at least five days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which or emailed to all prospective bidders (at the respective addresses furnished for such purposes, not later than two days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such from any obligation under his/her bid as submitted. All addenda so issued shall become part of the contract documents.

8. Laws and Regulations:

The bidder's attention is directed to the fact that all applicable State laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over the project shall apply to the contract throughout and they will be deemed to be included in the contract the same as though herein written out in full.

9. Method of Award – Most Qualified Bidder:

After receiving bids and determining the amount of funds estimated by the OWNER as available to finance the contract, the OWNER will award the contract to the lowest responsible bidder or qualifying bidder. The lowest most responsive bidder will be determined upon the basis of the lowest base bid or lowest base bid combined with alternates (additive or deductive). If the contract is to be awarded based on the owner's base bid with alternates, alternates will be accepted in the numerical order in which they are listed in the Form of Bid.

10. Obligation of Bidder:

At the time of the opening of bids each bidder will be presumed to have read and to be thoroughly familiar with the plans and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect of his/her bid.

Delivery

1. Delivery date shall be estimated in the bid.
2. Bids to include any shipping related costs of the Fire Engine to:
3. South Hamblen County Fire Department, 4686 S Davy Crockett Pkwy Morristown, TN 37813
4. At time of delivery, complete operation and maintenance manuals covering the equipment will be provided.

A Purchase Order Number will be issued and approved prior to delivery. Payment will be provided within 15 working days of delivery of apparatus provided apparatus and equipment meets bid specifications.

The department shall take delivery of the finished apparatus at the factory following the final inspection visit to the plant unless other arrangements are made prior to contract signing.

In order to ensure proper break-in period on the engine, transmission and driveline components, the apparatus shall be delivered under its own power.

During the delivery process, there shall be a representative on site a minimum of four (4) hours to provide initial instruction in proper operation of all components on the apparatus.

Bid Preparation

Bids can be prepared and submitted in sections or as a whole with sections outlined and separated. Bids may be submitted for any one section or all sections. Bids will be marked and indicated for each section submitted. Bids will be sealed and the specified date of opening will be determined.

Bidder agrees to provide all the equipment described in the specifications for the following unit prices: Equal to or Equivalent applies to all of the items below.

Item	Est Quantity	Description	Unit Price
Commercial Cab Top Mount Pumper			
Grant Total			

INSTRUCTIONS TO BIDDERS

The purpose of these instructions and specifications are to describe the requirements, construction, and delivery of a Fire Fighting Apparatus as outlined herein for the South Hamblen County Volunteer Fire Department here after referred to as the "Purchaser".

Bid envelopes shall be plainly labeled *2023 CDBG, South Hamblen County Fire Engine*.

Bids will only be considered from companies which have an established reputation in the field of fire apparatus construction and have been in business with a good service and sales record.

Each bidder shall furnish satisfactory evidence of his ability to construct the apparatus specified, and shall state the location of the factory where the apparatus is to be built. The bidder shall also show that they are in a position to render prompt service and furnish replacement parts for said apparatus.

It is the bidder's responsibility to see that their proposals arrive on time. Late proposals, facsimiles, telegrams, or telephone bids will not be considered.

The purchaser reserves the right to accept or reject any or all bids on such basis as the purchaser deems to be in its best interest.

All bid prices shall remain effective for 45 calendar days from the bid opening date.

The apparatus is to be of current year of manufacture and is to be new.

The bid price shall not include any local, state, or federal taxes.

DELIVERY

Each bidder shall clearly state the delivery date of the vehicle in calendar days. This shall be after receipt of the signed contract.

INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the furnishing and delivery to the purchaser a complete unit equipped as herein specified, with a view of obtaining the best results and the most acceptable apparatus for the purchaser.

These specifications cover only the general requirements as to the type of construction and test to which the apparatus must conform. Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features.

All equipment and components shall comply with the National Fire Protection Association Pamphlet 1901 (Current Edition), Standard for Automotive Fire Apparatus, for Pumper Fire Apparatus Equipped with a Fire Pump. In addition, the apparatus shall also comply with all federal, state, ICC, and DOT regulations, standards, and laws relating to commercial vehicles as well as to the fire apparatus.

Loose equipment shall be provided only as stated in the following pages.

LIABILITY

The bidder, if his/her bid is accepted, shall defend any and all suits and assume liability for the use of any patented process, device or article forming a part of the apparatus or any appliance furnished under the contract to the extent allowable under the law.

COMMERCIAL GENERAL LIABILITY INSURANCE

Each bidder shall supply proof of product liability and facility insurance equal to or exceeding $5,000,000. This shall be provided as part of the proposal.

GENERAL REQUIREMENTS

This specification package, along with any herein listed exceptions, shall be submitted as a part of the bidder's entire bid proposal. Do not detach or omit these sheets.

Proposal specifications must be on the manufacturer's own standard forms. In no case shall a bidder photocopy these specifications as his proposal specifications. "NO EXCEPTIONS"

Each bidder is required to provide in his bid to the purchaser a complete and accurate description of his own apparatus in the exact sequence of these specifications.

EXCEPTIONS, VARIATIONS, OR CLARIFICATIONS

These specifications are based upon performance criteria which have been developed by the purchaser as a result of extensive research and careful analysis of the data. Subsequently, these specifications reflect the only type of fire apparatus that is acceptable at this time. Therefore, major exceptions to the specifications will not be accepted.

All bidders shall place a "Y" for yes or a "N": for no next to each and every paragraph in the column provided on the right-hand edge of the paper, indicating compliance or noncompliance with that paragraph of the specifications.

A number shall be inserted next to the paragraph which relates to an explanation on page(s) entitled "Exceptions" that the bidder shall include with their proposal specifications.

Any exception shall be clearly defined with details as to the proposed alternative, referencing manufacturer and model where appropriate. Descriptive literature shall be provided to help evaluate the exception. A general exception cannot be taken for any paragraph. A full word for word Written Comparison shall be included within the bid for any exception listed. Each exception shall be considered by the degree of impact and total effect on the bid. Proposals taking total exception to the specifications shall not be considered by the purchaser. "NO EXCEPTIONS"

The purchaser shall determine which (if any) exceptions are acceptable and this determination shall be final.

The purchaser shall assume that failure to cite an exception indicates full compliance with the specifications. Should the equipment not comply with all requirements of this document, the equipment shall be rejected at the final inspection. All equipment shall be inspected for material, workmanship, and compliance with the specifications prior to acceptance. All equipment found to be in noncompliance shall be identified and the purchaser reserves the right to accept or reject the specific items. The noncompliant rejected equipment shall be replaced or reworked to meet the requirements of this document at no additional cost to the purchaser.

The bidder shall have thirty (30) days after delivery to fulfill that part(s) of the specifications which does not comply to the original outlined specifications. Bidder shall incur all expenses of pickup and redelivery of the apparatus.

CONSTRUCTION

The materials specified are considered absolute minimum. Exceptions will not be accepted or permitted since all raw materials of the specified type are available to all manufacturers. Since all manufacturers have the ability to shear, break, and weld as these specifications require, all basic design requirements shall be complied with.

The apparatus shall be constructed with due consideration to the nature and distribution of the load to be sustained and to the general character of service to which the apparatus is to be subjected when placed in service. All parts of the apparatus shall be of adequate strength to withstand the general service under full load. The apparatus shall be so designed that the various parts are readily accessible for lubrication, inspection, adjustment, and service.

DATA REQUIRED OF THE CONTRACTOR - NFPA 4.20

NFPA 4.20.1 Fire Apparatus Documentation

The contractor will supply, at the time of delivery, at least one (1) copy of the following documents:
(1) The manufacturer's record of apparatus construction details, including the following information:

a. Owner's name and address
b. Apparatus manufacturer, model and serial number
c. Chassis make, model, and serial number
d. GAWR of front and rear axles and GVWR
e. Front tire size and total rated capacity in pounds
f. Rear tire size and total rated capacity in pounds
g. Chassis weight distribution in pounds with water and manufacturer-mounted equipment front and rear
h. Engine make, model, serial number, rated horsepower, and related speed and governed speed; and if so equipped, engine transmission PTO(s) make, model, and gear ratio
i. Type of fuel and fuel tank capacity
j. Electrical system voltage and alternator output in amps
k. Battery make, model, and capacity in cold crank amps (CCA)
l. Transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio.
m. Ratios of all driving axles.
n. Maximum governed road speed
o. Pump make, model, rated capacity in gallons per minute (liters per minute where applicable) and serial number
p. Pump transmission make, model, serial number, and gear ratio
q. Auxiliary pump make, model, rated capacity in gallons per minute, (liters per minute where applicable) and serial number
r. Water tank certified capacity in gallons or liters
s. Aerial device type, rated vertical height in feet (meters), rated horizontal reach in feet (meters), and rated capacity in pounds (kilograms)
t. Paint manufacturer and paint number(s)
u. Company name and signature of responsible company representative
v. Weight documents from a certified scale showing actual loading on the front axle, rear axles(s), and over all fire apparatus (with the water tank full but without personnel, equipment, and hose)

(2) If the apparatus is a mobile foam fire apparatus, the certification of foam tank capacity
(3) Certification of compliance of the optical warning system

(4) Siren manufacturer's certification of the siren
(5) Written load analysis and results of the electrical system performance tests
(6) Certification of slip resistance of all stepping, standing and walking surfaces
(7) If the apparatus has a fire pump, the pump manufacturer's certification of suction capability
(8) If the apparatus has a fire pump, and special conditions are specified by the purchaser, the pump manufacturer's certification of suction capacity under the special conditions
(9) If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications
(10) If the apparatus has a fire pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed
(11) If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test (12) If the apparatus has a fire pump, the certification of inspection and test for fire pump.
(13) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test
(14) When the apparatus is equipped with a water tank, the certification of water tank capacity
(15) If the apparatus has an aerial device, the certification of inspection and test for the aerial device
(16) If the apparatus has an aerial device, all the technical information required for inspection to comply with NFPA 1911
(17) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy and the final installer's certification the foam proportioning system meets this standard
(18) If the apparatus has a CAFS, the documentation of the manufacturer's pre-delivery tests
(19) If the apparatus has a line voltage power source, the certification of the test for the power source
(20) If the apparatus is equipped with an air system, air tank certificates, the SCBA fill station certification, and the results of the testing of the air system installation
(21) Any other required manufacturer test data or reports

OPERATION AND SERVICE DOCUMENTS - NFPA 4.20.2

NFPA 4.20.2.1 - The contractor shall deliver with the fire apparatus complete operation and service documentation covering the completed apparatus as delivered and accepted.

The documentation shall address at least the inspection, service and operations of the fire apparatus and all major components thereof.

The contractor shall also deliver with the fire apparatus the following documentation for the entire apparatus and each major operating system or major component of the apparatus:

(1) Manufacturer's name and address
(2) Country of manufacture
(3) Source for service and technical information
(4) Parts replacement information

(5) Descriptions, specifications, and ratings of the chassis, pump (if applicable) and the aerial device (if applicable)
(6) Wiring diagrams for low-voltage and line voltage systems to include the following information:
(a) Pictorial representations of circuit logic for all electrical components and wiring
(b) Circuit identification
(c) Connector pin identification
(d) Zone location of electrical components
(e) Safety interlocks
(f) Alternator-battery power distribution circuits
(g) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems
(7) Lubrication charts
(8) Operating instructions for chassis, any major components such as pump or aerial device, and any auxiliary systems
(9) Precautions related to multiple configurations of aerial devices, if applicable
(10) Instructions regarding the frequency and procedure for recommended maintenance
(11) Overall apparatus operating instructions
(12) Safety considerations
(13) Limitations of use
(14) Inspection procedures
(15) Recommend service procedures
(16) Troubleshooting guide
(17) Apparatus body, chassis, and other component manufacturers' warranties
(18) Special data required by this standard
(19) A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus
(20) One (1) copy of the latest addition of FAMA's Fire Apparatus Safety Guide

NFPA 4.20.2.4 - The contractor will deliver with the apparatus all manufacturers' operations and service documents supplied with components and equipment that are installed or supplied by the contractor.

HIGHWAY PERFORMANCE NFPA 4.15

NFPA 4.15.1 - The apparatus, when loaded to its estimated in-service weight, shall be capable of the following performance while on dry, paved roads that are in good condition:

1: Accelerating from 0 to 35 mph (55 km/hr.) within 25 seconds on a 0 percent grade;

2: Attaining a speed of 50 mph (80 km/hr) on a 0 percent grade;

3: Maintaining a speed of at least 20 mph (32 km/hr) on any grade up to and including 6 percent.

NFPA 4.15.2 - The maximum top speed of fire apparatus with a GVWR over 26,000 lb (11,800 kg) shall not exceed either 68 mph (109 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

NFPA 4.15.3 - If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gallons, or the GVWR of the vehicle is over 50,000 lb, the maximum top speed of the apparatus shall not exceed either 60 mph or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

NFPA TAG REQUIREMENTS

A label that states the number of personnel the vehicle is designed to carry shall be located in an area visible to the driver.

A sign that reads "OCCUPANTS MUST BE SEATED AND BELTED WHEN APPARATUS IS IN MOTION" shall be provided and located in the chassis cab in an area that is visible from each seating position.

An accident prevention sign that states "OVERALL HEIGHT OF APPARATUS ___ INCHES"

One "Final Stage Label" shall be attached to the drivers side door jamb. The label shall certify that the complete vehicle conforms to the federal motor vehicle safety standards, which have been previously fully certified by the incomplete vehicle manufacture or by the intermediate vehicle manufacture and have not been affected by the final stage manufacture.

An accident prevention sign that states "DANGER: DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION - DEATH OR SERIOUS INJURY MAY RESULT" shall be provided and installed at the rear of the apparatus.

A label stating "DO NOT WEAR HELMET WHILE SEATED" shall be visible from each seating location.

WARRANTY

Each bidder shall include a copy of their warranty with the bid proposal. The following minimum warranties shall be provided, NO EXCEPTION.

The finest materials and utmost care go into the fabrication of each new apparatus. By using normal care, without abuse, this equipment will give you lasting service.

Each new motorized Fire and Rescue Apparatus is to be free from defects in material and workmanship, under normal use and service, for a period of one year. Our obligation under this warranty is limited to replacing or repairing, as the manufacturer may elect, any part or parts thereof, which, upon examination, would be

determined to be defective. Such defective part or parts will be replaced free of charge, and without charge for installation, to the original purchaser.

All warranty work related to the apparatus (not including vehicle chassis) is to be performed at the manufacturer's factory or at an authorized service center.

This does not obligate the manufacturer to bear the costs of transportation charges and related expenses incurred in the replacement of parts.

BODY WARRANTY

The manufacturer shall warrant the entire stainless steel body against rust and/or full corrosion perforation and metal fatigue for a period of thirty (30) years from the date of delivery to the original purchaser, provided the apparatus is used in a normal and reasonable manner.

The term "body" shall be inclusive of the following:

- Hose bed side walls
- Compartments and compartment supports
- Compartment doors except roll-up doors, when specified
- Complete subframe including pump house framing

WATER TANK WARRANTY

The contracted tank manufacturer shall warrant that the tank provided shall be of first-class workmanship and that, under normal conditions, shall show no defects due to faulty design, workmanship, or material for the Lifetime of the vehicle to the original owner.

PUMP WARRANTY

The contracted pump manufacturer shall warrant that the pump provided shall be of first-class workmanship and that, under normal conditions, shall show no defects due to faulty design, workmanship, or materials for a period of five (5) years.

PUMP PLUMBING WARRANTY

The galvanized or stainless steel plumbing components, as specified, and ancillary brass fittings used in the construction of the water/foam plumbing system shall be warranted for a period of ten (10) years or 100,000 miles. This covers structural failures caused by defective design or workmanship, or perforation caused by corrosion, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of ten years from the date of delivery.

12 VOLT ELECTRICAL WARRANTY

The 12 volt electrical system and ancillary components used in the construction of the apparatus shall be warranted for a period of five (5) years. This covers failures caused by defective design or workmanship, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser, for a period of five (5) years from the date of delivery.

Items specifically covered are:

- Electrical harnesses and harness installation
- Switches, circuit breakers, and relays
- LED Lighting: FMVSS required and warning lights
- Electrical connectors and connections, against corrosion or deterioration

Items excluded, as they are covered by specific warranties supplied by the manufacturer of the components:

- Chassis electrical systems and components installed by the chassis manufacturer.
- Batteries, battery chargers, two-way radio equipment, and similar equipment.
- Periodic cleaning and tightening of battery terminal connections.
- Accident, negligence, or unauthorized alteration of original equipment.

PAINT WARRANTY

The paint on the unit will be provided with a seven (7) year paint finish guarantee which will cover the finish for the following items:

- Peeling or delamination of the top coat and/or other layers of paint.
- Cracking or checking.
- Loss of gloss caused by defective finishes which are covered by this guarantee.

CHASSIS WARRANTY

Chassis shall be warranted by the chassis manufacturer as per the chassis manufacturer's issued warranty.

100% WARRANTY ON ALL OTHER ITEMS FOR ONE YEAR.

THIS WILL NOT APPLY

1. To normal maintenance services or adjustments.

2. To damage caused by negligence of normal maintenance.

3. To any vehicle which shall have been repaired or altered outside our factory in any way, so as, in our judgement, to affect its stability, nor which has been subjected to negligence, or accident, nor to any

vehicle made by us which shall have been operated at a speed exceeding the factory-rated speed, or loaded beyond the factory-rated load capacity.

4. To major components such as purchased chassis and associated equipment furnished with chassis, signaling devices, generators, batteries, or other trade accessories, inasmuch as they are usually warranted separately by their respective manufacturers or to ancillary equipment used in rescue or firefighting.

5. To loss of time or use of vehicle, inconvenience or other incidental expenses.

THIS WARRANTY IS MADE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, WITH RESPECT TO QUALITY, MERCHANTABLILITY, OR FITNESS FOR A PARTICULAR APPLICATION.

KENWORTH **– Or Owner Approved Equal** –T480 CHASSIS SPECIFICATION

Sales Code	Description
Model	
0000480	T480 Series Conventional
0071001	T480 Vocational Hood
0072001	Chassis Operation Will Include Stationary application used in lower 48 states [US only]. Stationary operation is defined as running the engine under load while stationary at a substantial fraction of engine gross horsepower (60% or greater) for an extended period of time (longer than 5 - 10 minutes).
0080070	CARB Exempt Application Emergency Vehicle Only.
0090161	T480 Single Rear
0098442	State of Registry: Tennessee
Engine & Equipment	
0130225	PACCAR PX-9 360EV 360@1650 1150@1200, 2024**– or Owner Approved Equal** Emergency Vehicle, With Turbo Exhaust Brake (VGT Brake) N09420 C333 0.....Reserve Speed Limit Offset (N09380 C334 0.....Maximum Cycle Distance (N202 N09360 C400 252...Reserve Speed Function Reset N09200 C399 120...Standard Maximum Speed Limit N09400 C401 10....Maximum Active Distance (N20 N09220 C402 0.....Expiration Distance (N207) N09540 C395 0.....Expiration Distance (N209) N09260 C121 68....Max Vehicle Speed in Top Gea N09440 C234 NO....Engine Protection Shtdwn

	N09460 C231 NO....Gear Down Protection
	N09580 C133 5.....Idle Shtdwn Time
	N09680 C233 NO....Idle Shtdwn Override
	N09480 C132 1400..Max PTO Speed
	N09300 C128 68....Max Cruise Control Speed
	N09500 C239 NO....Cruise Control Auto Resume
	N09520 C238 NO....Auto Engine Brake in Cruise
	N09780 C190 80....High Ambient Temperature Thr
	N09740 C188 40....Low Ambient Temperature Thre
	N09760 C189 60....Intermediate Ambient Tempera
	N09720 C382 YES...Enable Hot Ambient Automatic
	N09600 C396 NO....Enable Impending Shutdown Wa
	N09620 C397 60....Timer For Impending Shutdown
	N09640 C206 35....Engine Load Threshold
	N09560 C225 NO....Enable Idle Shutdown Park Br
1000046	EPA Emissions Warranty Engine
1000151	PremierSpec
1000243	Gearing Analysis: Performance power before economy results.
1000255	Customer's Typical Operating Spd: 68 MPH
1000524	RegistrationYear
	Year of Registration: 2024
1000684	Effective VSL Setting NA
1000858	Engine Idle Shutdown Timer Disabled
1000891	Eff EIST NA Expiration Miles
	Use only with MX and Cummins engines **– or Owner Approved Equal**
1002060	Air Compressor: Cummins 18.7 CFM For Cummins And
	PACCAR PX engines **– or Owner Approved Equal**
1041399	Air Cleaner: MD Composite Engine Mounted
1099300	Air Inlet Ember Separator NFPA Compliant for
	Fire Applications.
1105232	Fan Hub: Horton Variable Speed
	For use with PX engines, L9N or B6.7N natural gas engines on 2.1M only.
1121234	Cooling Module: 2.1M MD Vocational Hood, Clog Resistant, 1000 Square Inches
1247247	EXH: Single Can 2024 RH Under with RH Horizontal Tailpipe Below Rail
1321102	Fuel Filter: PACCAR 2.1M MD for PX-7 or PX-9 Fuel/water separator for 2021
	and later engines **or owner approved equal.**
1321200	Run Aid:None
	*For Fuel Filter
1321300	Start Aid:None
	*For Fuel Filter
1500029	Kenworth Fuel Cooler **– or Owner Approved equal**
	Required for Cummins **– or Owner Approved equal –**engines with a single fuel tank. Required
	for PACCAR **– or Owner Approved Equal –**

MX-13 engine with a single fuel tank and stationary use: High RPM, low vehicle speed, sustained for longer than 1 hour. Optional for all other applications.

1812451 Alternator: Delco 40SI 320 amp Brushless with battery voltage sense **or owner approved equal**

1821210 Batteries: 3 PACCAR GP31 Threaded Post (700-730) 2100-2190 CCA dual purpose**– or Owner Approved Equal**

1836107 Starter: PACCAR 90P47 12V**– or Owner Approved Equal –** with PACCAR PX-7**– or Owner Approved Equal**

1840065 12V Low Voltage Disconnect for Battery Protection

1901018 Remote PTO/Throttle, 12-Pin, 250K, Back of Cab OR Back of Sleeper, J1939, Remote Control Provision

Transmission & Clutch

2011615 Transmission: Allison 3000EVS 6-speed, With PTO Provisions at 4 and 8 o'clock. 6th Generation controls**– or Owner Approved Equal.** Includes heat exchanger & oil level sensor. Emergency Vehicle Series for vocational applications. Transynd transmission fluid is standard on all Allison 1000, 2000, 3000 & 4000 series transmissions**– or Owner Approved Equal.**

2401905 Driveline: 3 Dana Standard-Duty; 2 Centerbearing. **– or Owner Approved Equal–** *Standard duty is 1710 series.

2409942 Two Heavy-Duty One-Piece Aluminum Crossmembers
This option upgrades existing crossmembers. The cost does not include the centerbearing and bracket. Crossmember locations will be in accordance with Kenworth engineering standards, **– or Owner Approved Equal –** using the major components specified on the DTPO.

2410018 Torque Converter Included W/ Allison Transmission**– or Owner Approved Equal.**

2410153 Push Button Shifter Controls, Center Console
Mounted for Allison Transmission2.1m Medium Duty only **– or Owner Approved Equal**

2410244 J1939 Park Brake Auto Neutral

2460069 Transmission Cooler: Automatic Transmission
For use with 2.1M MD with Vocational Hood. Includes cooler protector.

Front Axle & Equipment

2503463 Dana Spicer E-1462I Front Axle rated 14.6K 3-1/2in. drop **– or Owner Approved Equal**

2621310 Front Brakes: 14.6K Bendix ES S-Cam 16.5x5 in. **– or Owner Approved Equal.**

2690002 Front Brake Drums: 14.6K 16.5x5 in. cast.

2702500 Front Hub: Iron Hub Pilot 14,600 lbs.
11-1/4 in. bolt circle. For use w/ air disc brakes. Consider wheelguards (5850002) w/ aluminum wheels.

2741970 ConMet PreSet Plus Hub Package**– or Owner Approved Equal**; Front Axle.

2750001 Hubcap: Front Vented.

2765001 Front Auto Slack Adjuster for Drum Brakes.

2864072 Front Springs: Taperleaf 14.6K W/ Shock Absorbers w/ maintenance-free elastomer spring pin bushings**– or Owner Approved Equal.**

2895091 Single Power Steering Gear: 14.6K.

2900059 40 mm Front Suspension Spacer Block

Rear Axle & Equipment

3081093 Single Dana Spicer S30-190 Rear Axle– **or Owner Approved Equal**; 30K capacity rated at 30K. Single rear axle with 74in. track, outer ends included w/ axle 16.5x7 brakes, iron hubs and dustshields

3200538 Rear Axle Ratio - 5.38.

3367001 Rear Brake Included W/ Rear Axle.

3392010 Rear Brake Drums: Cast Included W/ Axle or brake.

3407026 Rear Hub: Included W/ Axles 11-1/4 in. B.C. hub-pilot.

3440100 Oil Seals Included W/ Axle.

3465001 Single Rear Axle Automatic Slack Adjusters. For use with drum brakes.

3485214 Spring Brake: 3036 Long Stroke Single 30 Square inches; 36 square inches spring chamber. For drum brakes

3495226 Bendix 4S/4M Anti-Lock Brake System– **or Owner Approved Equal.**

3531001 Wheel Differential Lock for Dana Spicer Axles **– or Owner Approved Equal.** S21-170/172, S21-190, S23-170/172, S23-190, S26-190 & S30-190; adds D to the end of the axle part number.

3666435 Rear suspension: single Reyco 79KB multileaf 31K **– or Owner Approved Equal.** 28K spring plus helper. Laden height 8.9 inches, unladen height 11.7 inches. Not available with shocks or swaybars. Not rear air disc brake compatible.

3836300 Rear Axle Stabilizer bar for Reyco 79KB **– or Owner Approved Equal.**

3836315 Bolted Rear Suspension Crossmembers for Reyco 79KB– **or Owner Approved Equal.** Replaces medium duty standard.

Tires & Wheels

4010004 Front Tires: Michelin X Works Z 12R22.5 16PR**– or Owner Approved Equal.**

---------- Rear tires: Michelin XDN2 315/80R22.5 16PR**– or Owner Approved Equal.** 42.9in. Diameter. drive tire. 20 in. SLR. Code is priced per pair of tires.

4900004 Rear Tire Quantity: 4

5045263 Front Wheel: Alcoa 88565 22.5x8.25 aluminum, with Lvl One [TM] High Polish finish, hub-pilot mount. 8000lb. maximum rating. Severe service. Air disc brake compatible **– or Owner Approved Equal.**

5245263 Rear Wheel: Alcoa 88565 22.5x8.25 aluminum, With Lvl One [TM] High Polish finish, hub-pilot mount. 8000lb. maximum rating. Severe service. Air disc brake compatible. Code is priced per pair of wheels**– or Owner Approved Equal.**

5859010 Single Front Axle: 2 wheels Dura-Bright Mirror Polish Dura-Bright outboard surface of aluminum wheels.

5859011 Single Rear Axle Wheels: 4 Wheels Dura-Bright Mirror Polish. Dura-Bright outboard surface of outer dual or single aluminum wheels.

5900004 Rear Wheel/Rim Quantity: 4

South Hamblen County Vol. Fire Dept.

Frame & Equipment

6054410	Frame Rails: 10-5/8 x 3-1/2 x 5/16 in. Steel to 309 in. to 380 in. Truck frame weight is 2.91 lb.-in. per pair of rails. Section modulus is 14.80 cu.in., RBM is 1,776,000 in-lbs per rail. 120,000 PSI yield. Heat treated. Frame rail availability may be restricted based upon application, axle/suspension capacity, fifth wheel setting, or component/dimensional specifications. The results of the engineering review may result in a change to the requested frame rail. If a change is required Application Engineering will advise the dealer of the appropriate material specification for a substitute rail.
6141600	Full Steel Insert: for 10-5/8 in. or 10-3/4 in. Steel 337 in. to 416 in. or 2nd insert for 11-5/8 in. steel frame. Adds 1,149,000 in-lb to main rail RBM. Truck insert weight is 2.05 lb.-in. per pair of rails. Full frame insert length is equal to wheelbase plus rear frame cutoff plus dimension forward of front axle by model. See databook addendum section 7.2.
6309910	Delete bumper: Requires a bumper setting code.
6319064	64 in. Bumper Setting. Requires a Bumper Code.
6321010	Front Tow Loops: Two
6390034	24 in. Frame Rail Extensions. Vocational Hoods only.
6400633	Battery Box: Temporary Across the Rails. Includes maximum cable length available.
6409908	Battery Box Location: BOC Across the Rails.
6451126	DPF/SCR Box Polished End Plates and Polished cover.
6490139	Heavy-Duty One-PC Aluminum Intermediate/ Fill-In crossmember.
6490433	Heavy-Duty 5-Piece Rear Cab Support, Hucked assembly. Huck fastened to frame.
6721102	Rear Mudflap Arms: Betts B-25 Standard-Duty, straight. Includes B1732 mounting brackets as standard.
6722000	Rear Mudflap Shields: White Plastic Antisail W/ MFG. logo
6741023	Square End-of-Frame W/ Bolted Crossmember, non-towing.

Fuel Tanks & Equip

7140050	50 US Gallon D-Shape Rectangular Aluminum Under fuel tank, replace. With non-slip step.
7722170	Small DEF Tank, 5.5 Gallons.
7839006	Polished Fuel Tank Steps.
7840015	Polish Only One Aluminum Tank.
7840038	Polished Cover for 1 DEF Tank Any Size.
7889061	Polished Stainless Steel Tank Straps for 1 Tank.
7889206	Minimum Required DEF to Fuel Fill Ratio.
7889606	DEF Tank Location is LH Under Cab.
7920050	Location: 50 gal fuel tank LH under cab

Cab & Equipment

8024311	Cab: Stamped Aluminum with Curved Windshield LED markers. Requires seperate roof code.
8090153	Hood: Sloped Vocational w/ Stationary Grille w/ Chrome Crown
8108003	Ember Filter For Cabin Air. Used to keep embers out of the HVAC filter element. Cannot be used with code 8108002.
8108011	Cab HVAC - Day Cab and 40 in. Sleeper System With Defrost, A/C, and 48,000 BTU/hr Heater. Includes automatic temperature control with one touch defrost operation and dash mounted cab temperature and solar intensity sensors. Pleated fresh air filter and cabin recirculation air filter standard. The Kenworth HVAC system**– or Owner Approved Equal–** is designed to provide optimal heating and cooling in all operating environments without need for additional insulation. Cab HVAC without sleeper heater AC is available with 40in sleeper.
8201013	Steering Wheel: 18 in. 4-Spoke.
8201200	Adjustable Telescoping Tilt Steering Column.
8222409	Gauge: DD Virtual Gauge - Air Filter Restriction
8222413	Gauge: DD Virtual Gauge - Manifold Pressure Boost
8222414	Gauge: DD Virtual Gauge - Engine Percent Torque
8222418	Gauge: DD Virtual Gauge - Engine Hours Instrument Cluster
8222712	Gauge: Fuel Filter Restriction Gauge.
8222722	Gauge: Manifold Pressure Gauge. The NavPlus HD unit includes a virtual manifold pressure gauge.
8226667	Gauge: Oil Temperature Gauge Transmission. The NavPlus HD unit includes a virtual transmission oil temperature gauge.
8282024	Main Instrument Package: 7" Digital Display Cluster. Includes Physical (Analog): Speedometer, Tachometer, Oil Pressure, and Coolant Temp; and Digital: Fuel Level #1, DEF Level, DPF Filter Status, Fuel Economy, Volts Telltale, OAT and Primary Air Pressure, Secondary Air Pressure, and Air Application for air brake trucks.
8330591	Interior Trim Package: 2.1M MD Gray Foam Backing/Cloth Headliner W/Gray Sunvisor & Seat Color Three Underdash Center Console Cupholders (Two If Allison Transmission**– or Owner Approved Equal–** Is Selected).
8410122	Driver Seat: KW Air Seat HB Vinyl w/ Dual Armrests/Susp Cover/Isolator Lever
8480227	Rider Seat: KW Toolbox Seat HB Tough Cloth w/ Dual Armrests
8489912	NFPA Compliance Kit: 2.1 m Includes Seat occupancy sensors. Seat belt switches, VDR & seat sensor harness, reflective labels, and a second copy of operators manual.
8496569	Driver & Rider Seat Belts: Red, Replace Standard. NOT NFPA Compliant.
8601430	Kenworth Radio DEA700 AM/FM/WB**– or Owner Approved Equal.**
8698965	Speaker Package For Cab: (2) Speakers B-Pillar

8700196	Turn Signal: Self-Cancelling
8700283	LH and RH Trip Ledge Rain Deflectors
8700663	Kenworth TruckTech+– **or Owner Approved Equal** –: This system provides the World's Best reporting of engine and aftertreatment fault codes, as well as enhanced support for the truck owner through rapid communication of fault severity and recommended actions. This is standard on all Kenworth– **or Owner Approved Equal –** models with a PACCAR MX engine, Cummins X15 engine, PX engine or Natural Gas engine **– or Owner Approved Equal**
8800380	Grabhandle: LH & RH SOC Non-Slip Ergonomic Grab Handles Mounted To The Left Hand and Right Hand Exterior Of The Cab For Entry and Exit. NFPA Compliant.
8800402	Dual Cab Interior Grabhandles: A Pillar Mounted Dash Wrap and B Pillar Mounted Grabhandles
8832113	Kenworth Daylite Door With Standard LH/RH electric door locks and LH/RH electric window controls **– or Owner Approved Equal**
8841411	Single Air Horn Under Cab.
8850139	Look-Down, Pass. Door, Black 11x6
8850841	Mirror Shell: Dual Aero Chrome
8860852	Mirror: Dual KW Aero Rear View Motor, heated with Integral CX.
8871446	Rear Cab Stationary Window 19in x 36in
8890101	One-Piece Bonded-In Windshield With Curved Glass. Standard.
8890874	Kenworth Cab Air Suspension– **or Owner Approved Equal.**
8891012	Roof: Low Profile Stamped Steel

Lights & Instruments

9010803	Headlamps: Single Halogen Complex Reflector w/ Turn Indicator, Reflector and DRL. Fender Mtd.
9020101	14-Pin RP170 Body Lighting Connector.
9022137	Marker Lights: Five, Rectangular, LED
9030052	LED Stop,Turn,Tail: With Two LED Backup Lights and With An LED License Plate.
9090052	Brake Lights on when Engine Brake Active. Can only be selected when chassis also has engine brake. Cannot be used with options to delete engine brake.
9090115	Reflectors: Two Midframe
9090180	Backup Alarm: Tail Light Bracket Mounted Variable self-adjusting 82-102 DBA.
9090849	Polyswitches Replacing Fuses. Switch Will automatically reset after removal of excess load.

Air Equipment

9101218	Air Dryer: Bendix AD-HF Puraguard Heated– **or Owner Approved Equal.**
9108001	Moisture Ejection Valve W/ Pull Cable Drain.

9140020	Nylon Air Tubing in Frame & Cab, Excluding Hoses subject to excessive heat or flexing.

Extended Warranty

9200008	Base Warranty - PACCAR PX-9 Engine 24 months / 250,000 miles / 402,336 km / 6250 hours– **or Owner Approved Equal.**
9200113	Severe Service Medium-Duty Warranty: 12 months/ 50,000 miles & km
9212661	TruckTech+ RD - 5YR Sub PACCAR PX Engines– **or Owner Approved Equal.**
9220001	Base Warranty: Emissions 5YR/100K MI - EPA Engine

Miscellaneous

9409852	GHG Secondary Manufacturer: Does Not Apply
9490003	Additional Lead Time Required for Off Highway & /or specialty component truck.
9490206	Warning Triangle Reflector Kit: Shipped Loose. Kit consists of 3 triangles in plastic carrying case. Not floor mounted.
9490645	Zinc Phosphate Frame Rail Paint Processing. Requires frame rail code. Code is for 1 pair of rails.
9490647	Zinc Phosphate Frame Insert Paint Processing. Requires any 1st frame insert code. Code is for 1 pair of any frame inserts.
9491659	VMUX Architecture

Promotions

Paint

9700000	Paint Color Number(s). N9702 A - L0235 RED N9704 B - L0006 WHITE N9720 FRAME N0001 BLACK
9943004	Bumper Unpainted
9943051	Day Cab Premium Paint
9944822	2 - Color Cust Design - Day Cab - Lo Complex Must submit design for approval. A Custom Design and Color Layouts order form is required with all custom designs. When transmitting ETO Electronic Paint Order, please submit all custom forms to Kenworth Sales Department– **or Owner Approved Equal**–, Attn: Paint Coordinator. Custom paint designs will be reviewed on a case by case basis. Approval or disapproval is at the discretion of Kenworth Truck Company– **or Owner Approved Equal**. Consult with your paint coordinator if the chassis paint sketch includes any of the following items: Items attached to the frame or below the frame are to be painted a color that is different than the frame paint color, Items attached to the cab or sleeper are to be painted a color that is different than the cab or sleeper paint color, The requested paint number cannot be identified as a number or type approved by Kenworth– **or Owner Approved Equal**.

9965510 Base Coat/ Clear Coat.
The Kenworth Color Selector **– or Owner Approved Equal –**contains additional instructions, as well as information on Kenworth paint guidelines and surface finish applications**– Owner Approved –**.
Kenworth **– or Owner Approved Equal –**is standard with Dupont Imron Elite paint.

Special Requirements
Special Requirement 1 098025
Special Requirement 2
Special Requirement 3
Special Requirement 4

Total Weight 12,457

TRANSMISSION SHIFT LOCK - ALLISON-3000 EVS**– or Owner Approved Equal.**

The transmission shall have a shift lock-up to keep the automatic transmission in direct gear during pumping operations. The transmission shift lock-up shall be automatically activated when the pump is placed in gear and deactivated when the pump is taken out of gear.

Fuel Tank Cover - Delete

PASSENGERS TRIM

The passengers side entrance steps and engine after treatment components will be clad with polished aluminum diamond plate. This will be done in a manner which is both safe and practical, and shall add to the appearance of the apparatus. All steps shall have a positive, skid-resistant surface.

CHASSIS MODIFICATION - RELOCATE CHASSIS BATTERIES

The frame-mounted chassis batteries shall be relocated to the right pump panel area with an access door.

CHASSIS MODIFICATION - COVER BACK OF CAB

The back of the cab, from the window line down, shall be covered with aluminum diamond plate.

CONSOLE BETWEEN THE DRIVER AND OFFICER SEAT

An aluminum console shall be specially designed to fit between the driver and the officer seats, to house all electrical lighting switches.

The console shall also be designed to hold the customer's specified communication equipment.

Exact layout shall be approved by the customer, prior to construction.

EXHAUST HEAT SHIELD

The chassis horizontal exhaust pipe shall be equipped with a stainless steel heat shield to protect the body compartments.

The exhaust pipe shall discharge engine exhaust to the right side of the apparatus.

MUDFLAPS

Heavy-duty black rubber mudflaps shall be provided behind the front tires.

Black, anti-sail mudflaps shall be installed behind the rear wheels.

CHASSIS MODIFICATIONS - REAR STAINLESS STEEL TOW EYES

Two (2) stainless steel tow eyes shall be attached directly to the chassis frame rails at the rear.

EXTENDED FRONT BUMPER

The chassis front bumper shall be extended 18 inches to accommodate specified accessories.

BUMPER APRON

An apron, constructed of .125" aluminum diamond plate, shall be provided and installed between the bumper and the front face of the cab. It shall be fastened with stainless steel bolts, and shall be capable of supporting a 250 pound weight.

FRONT BUMPER COMPARTMENT - CENTER

A compartment shall be provided in the bumper apron, located in the center, between the frame rails, which may be used as a hose well. The compartment shall be constructed of .125 inch 5052-H32 grade aluminum, and shall include drain holes in the bottom corners to allow excess moisture to escape. The compartment will be sized to hold 100' of 1-3/4'' DJ hose and 50' of 3.00'' DJ hose with divider**– or Owner Approved Equal.**

The hose shall be secured with Zico Quic-straps**– or Owner Approved Equal –** to prevent unintentional deployment of the hose, per NFPA
15.10.5.

HINGED LID

The compartment shall include a hinged lid constructed of aluminum diamond plate. The lid shall be flush with the bumper apron and shall include a latch to secure the lid and a mechanism to hold the lid open.

Meets NFPA 15.10.5 - Any hose storage area shall be equipped with a positive means to prevent unintentional deployment of the hose from the top, side, front, and rear of the hose storage area while the apparatus is underway in normal operations.

STAINLESS STEEL 2-RIB FRONT BUMPER

A 12" high, heavy-duty, 10 gauge, polished stainless steel, wrap around, 2-rib front bumper shall be provided the full width of the cab. The bumper shall be bolted directly to the chassis frame rails with stainless steel bolts.

HELMET STORAGE

Two (2) Ziamatic model UHH-1 helmet holders **– or Owner Approved Equal–**shall be provided and mounted in the cab. Mounting location to be approved by the customer at pre-paint inspection.

VEHICLE DATA RECORDER AND SEAT BELT WARNING SYSTEM

DATA RECORDING SYSTEM

The chassis shall be equipped with a Weldon Vehicle Data Recorder (VDR) system**– or Owner Approved Equal**. The system shall be designed to meet NFPA 1901. The following information shall be recorded:

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed
- Engine Throttle Position
- ABS Event
- Seat Occupied Status
- Seat Belt Status
- Master Optical Warning Device Switch Position
- Service Brake
- Engine Hours
- Time
- Date

Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines, and shall be retrievable by connecting a laptop computer to the VDR system. The laptop connection shall be a panel-mounted, female, type-B USB connection point, remotely mounted in the left side foot well of the cab.

SEAT BELT WARNING

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, **– or Owner Approved Equal–**shall be installed for each seat within the cab. The system shall activate an indicator light in the instrument panel, a digital seat position indicator with a seat position legend in the switch panel, and an audible alarm.

The warning system shall activate when any seat is occupied with a minimum of 60 pounds, and the corresponding seat belt remains unfastened. The warning system shall also activate when any seat is occupied, and the corresponding seat belt was fastened in an incorrect sequence. Once activated, the visual indicators and audible alarm shall remain active until all occupied seats have the seat belts fastened.

TIRE PRESSURE INDICATOR – NFPA 4.13.4

Reel Wheels Tire Watch stainless steel electronic LED valve caps that shall be installed on all wheels. Caps shall illuminate with a red LED when tire pressure drops 8 psi. The valve caps are self-calibrating, and are set to the pressure of the tire upon installation.

SNOW CHAINS - ONSPOT

One set of Onspot six (6) strand snow chains**– or Owner Approved Equal –** shall be provided and installed on the rear axle of the chassis to provide instant traction while traveling on ice and snow at speeds below 35 MPH.
Control switch shall be located in the cab.

FRONT WHEEL TRIM

The front axle shall be trimmed with stainless steel "baby moon" hub caps, (with hole for oil seals,) and stainless steel lug nut covers.

REAR WHEEL TRIM

The rear axle(s) shall be trimmed with stainless steel "Lincoln hat" hub covers and stainless steel nut covers.

IGNITION ON LIGHT

A green "MASTER DISCONNECT ON" indicator light, visible from the driver's position, shall be provided.

IGNITION - KEY CHAIN

The key to the chassis ignition shall be permanently chained to the dash to prevent accidental removal of the key from the cab.

MASTER LOAD DISCONNECT SWITCH

The chassis battery system shall be equipped with a Cole-Hersee model 2484-09 master load disconnect switch**– or Owner Approved Equal–**, installed in the cab and accessible to the driver.

BATTERY CHARGER, BUILT-IN BATTERY SAVER, BAR GRAPH DISPLAY, AND AUTO PUMP

A Kussmaul Auto Charge #1000 Series Model #091-215-12, 15 amp battery charger and 3 amp Battery Saver– **or Owner Approved Equal–** shall be provided and installed. The charger shall include a Model #091-199-001 remote digital display.

The Auto Charge 1000 with Parasitic Load Compensation (PLC) is a compact, microprocessor controlled, completely automatic, single channel battery charger designed for vehicles with a single battery system. The PLC charger is designed to withstand the shock and vibration encountered by vehicle mounted equipment.

The Battery Saver component shall eliminate drain on vehicle's battery system when vehicle is not in use. The system shall automatically disconnect auxiliary vehicle loads from battery when the charger is energized.

Parasitic Load Compensation feature is designed especially to meet the heavy duty requirements of emergency vehicles. Parasitic load compensation allows the operator to input the total number of parasitic load amps on the vehicle. The charger will then shift the absorption stage set point so the battery voltage will drop to the float voltage when the desired current is reached. This will lead to a longer battery life and no overcharging or overheating.

AUTO PUMP

A Kussmaul 091-9B-1 Auto Pump **– or Owner Approved Equal –**shall be provided and plumbed to the chassis air brake system to maintain air pressure. System shall be 120 volt 60 Hz shaded pole A. C. motor operating a single cylinder air compressor designed specifically for installation on vehicles with air brakes. During long idle periods of the vehicle, when even the slightest seepage can cause an air brake system pressure to drop below the brake lockup pressure, the Auto Pump AC automatically starts to maintain the pressure.

It is to be powered by a Kussmaul #091-55-120 20 amp 120V auto-eject inlet receptacle, with weather proof cover and box**– or Owner Approved Equal –**, located on the left-hand pump panel.

POWER POINT CONSOLE MOUNT

The cab shall include two (2) 12 volt cigarette-lighter-type receptacles in the center console to provide a power source for 12 volt electrical equipment. The receptacles shall be wired to be live with the battery master switch.

CHASSIS MODIFICATION - EXTERNAL JUMPER POSTS

One (1) set of external jumper posts shall be supplied on the unit, located near the batteries, and directly connected to the batteries.

The posts will be clearly color-identified, so there will be no confusion when connecting jumper cables or a battery charger to the posts.

CHASSIS MODIFICATIONS-110 VOLT SHORELINE

A 110 volt shoreline shall be run to the interior of the cab for accessory electrical equipment.

Line shall be wired to a six (6) outlet power strip, located in the center of the cab, where designated at the pre-paint inspection.

RADIO ANTENNA MOUNTS

One (1) antenna mounting base, Model MATM, with 17 feet of coax cable and weatherproof cap shall be provided for two-way radios or **Owner Approved Equal**.

The mount shall be located on the cab roof.

The cable shall be routed to the right side interior and connected to customer supplied pre-programmed radio. Customer supplied radio shall be installed in the console.

HALE QMAX 1750 GPM SINGLE-STAGE MIDSHIP PUMP– **or Owner Approved Equal**

The pump must deliver the percentage of rated capacity at the pressure listed below:

- 100% of rated capacity at 150 PSI net pump pressure
- 100% of rated capacity at 165 PSI net pump pressure
- 70% of rated capacity at 200 PSI net pump pressure
- 50% of rated capacity at 250 PSI net pump pressure

DETAILED SPECIFICATIONS

Pump Assembly

1. The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis, and have the capacity of 1750 gallons per minute (U.S. GPM), NFPA-1901 rated performance.
2. The entire pump shall be assembled and tested at the pump manufacturer's factory.
3. The pump shall be driven by a drive line from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.
4. The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance spots as outlined by the latest NFPA Pamphlet No. 1901. Pump shall be free from objectionable pulsation and vibration.
5. The pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI (2069 bar). All metal moving parts in contact with water shall be of high quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable.

6. Pump body shall be horizontally split, on a single plane in two sections for easy removal of entire impeller assembly including wear rings and bearings from beneath the pump without disturbing piping or the mounting of the pump in chassis.
7. The pump body shall extend as one piece across the truck chassis from side mounting to side mounting and incorporate the discharge manifolding system with a minimum of (2) 4" ports and (7) 3" ports.
8. The pump shall have one double suction impeller. The pump body shall have two opposed discharge volute cutwaters to eliminate radial unbalance. (No exceptions)
9. Pump shaft to be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing to be located immediately adjacent to the impeller (on side opposite the gearbox). The sleeve bearing is to be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material. (No exceptions.) The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.
10. Pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machined and individually balanced. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.
11. Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wrap-around double labyrinth design for maximum efficiency. (No exceptions.)
12. The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel to be super-finished under for longer shaft life. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

Gearbox – G Gearbox

1. Pump gearbox shall be of sufficient size to withstand up to 16,000 lbs. ft. of drive through torque of the engine system. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.
2. The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2-3/4 inches in diameter, on both the input and output drive shafts. They shall withstand the full torque of the engine.
3. All gears, both drive and pump, shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened, to give an extremely accurate gear for long life, smooth, quiet running, and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust. (No exceptions.)
4. The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.
5. If the gearbox is equipped with a power shift, the shifting mechanism shall be a heat treated, hard anodized aluminum power cylinder, with stainless steel shaft. An in-cab control for rapid shift shall be provided that locks in road or pump.
6. For automatic transmissions, three green warning lights shall be provided to indicate to the operator(s) when the pump has completed the shift from Road to Pump position. Two green lights to be located in the truck driving compartment and one green light on pump operators panel adjacent to the throttle control. For manual transmissions, one green warning light will be provided for the driving compartment. All lights to have appropriate identification/instruction plates.

PUMP CONTROL

Provisions shall be made for placing the pump drive system in operation, using controls and switches that are identified, and within convenient reach of the operator.

A "PUMP ENGAGED" indicator shall be provided in the driving compartment and on the operator's panel to indicate that the pump shift process has been successfully completed. An "OK TO PUMP" indicator shall be provided in the driving compartment to indicate that the pump is engaged, the chassis transmission is in pump gear, and the parking brake is engaged.

The fire pump-shift system shall be equipped with a means to prevent unintentional movement of the control device from its set position. The system shall include a nameplate, indicating the chassis transmission shift selector position to be used for pumping, and located so that it can be easily read from the driver's position.

The system shall include the applicable NFPA standard interlocks, pump shift, and "OK TO PUMP" indicator lights in the cab and at the pump panel. The fire pump system shall be equipped with an interlock system to ensure that the pump drive system components are properly engaged in the pumping mode of operation, so that the pumping system can be safely operated from the pump operator's position.

If applicable, the secondary braking device shall be automatically disengaged for pumping operations.

HALE **– or Owner Approved Equal–**ANODE SYSTEM

Two (2) Hale anodes **– or Owner Approved Equal –**shall be installed in the pump to prevent damage caused by galvanic corrosion within the pump.

One (1) installed in the suction side of the pump and one (1) installed in the discharge side of the pump.

The anodes should be inspected every 12 months and replaced when over 75% of the zinc has been consumed. Performance of the anode life will vary with water quality and PH.

PRESSURE GOVERNOR, MONITORING, AND MASTER PRESSURE DISPLAY

Fire Research InControl series model TGA-300 or **Owner Approved Equal** pressure governor and monitoring display kit shall be installed. The kit shall include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 5-1/2" high by 10-1/2" wide by 2" deep. Inputs for monitored information shall be from a J1939 databus or independent sensors or **Owner Approved Equal**. Outputs for engine control shall be on the J1939 databus or **Owner Approved Equal** or engine specific wiring.

The following continuous displays shall be provided:

- Pump Discharge; shown with four (4) daylight-bright LED digits, more than 1/2" high
- Pump Intake; shown with four (4) daylight-bright LED digits, more than 1/2" high
- Pressure / RPM setting; shown on a dot-matrix message display
- Pressure and RPM operating mode LEDs
- Throttle Ready LED
- Engine RPM; shown with four (4) daylight-bright LED digits, more than 1/2" high
- Check Engine and Stop Engine warning LEDs
- Oil Pressure; shown on a dual-color (green/red) LED bar graph display
- Engine Coolant Temperature; shown on a dual-color (green/red) LED bar graph display
- Transmission Temperature: shown on a dual-color (green/red) LED bar graph display
- Battery Voltage; shown on a dual-color (green/red) LED bar graph display.

The dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options, when selected by the operator. All LED intensity shall be automatically adjusted for day and nighttime operation.

The program shall store the accumulated operating hours for the pump and engine, to be displayed with the push of a button. It shall monitor inputs and support audible and visual warning alarms for the following conditions:

- High Battery Voltage
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Transmission Temperature
- Low Engine Oil Pressure
- High Engine Coolant Temperature
- Out of Water (visual alarm only)
- No Engine Response (visual alarm only).

The program features shall be accessed via push buttons, located on the front of the control panel. There shall be a USB port located at the rear of the control module to upload future firmware enhancements.

Inputs to the control panel from the pump discharge and intake pressure sensors shall be electrical. The discharge pressure display shall show pressures from 0 to 600 psi. The intake pressure display shall show pressures from -30 in. Hg to 600 psi.

The governor shall operate in two control modes, Pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes. A throttle ready LED shall light when the interlock signal is recognized. The governor shall start in Pressure mode, and set the engine RPM to idle. In Pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor shall maintain the engine RPM at the level set by the operator, except in the event of a discharge pressure increase. The

governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 psi. Other safety features shall include recognition of no-water conditions, with an automatic programmed response and a push button to return the engine to idle.

The pressure governor, monitoring, and master pressure display shall be programmed to interface with a Paccar engine.

HALE **– or Owner Approved Equal –**PRIMING PUMP

A Hale ESP environmentally-safe, oil-less primer **– or Owner Approved Equal –**shall be provided.

The priming pump will be a positive displacement vane-type, shall be electrically-driven, and shall conform to standards outlined in NFPA 1901.

One PVG priming control valve will both open the priming valve and start the priming motor.

PIPING

All piping shall be heavy-duty, 304 grade, schedule 10 stainless steel or Class 1 high-pressure flexible hose. All stainless steel fittings shall be threaded or welded.

Class 1 flexible hose shall be Black SBR synthetic rubber hose with 300# working and 1200# burst pressure, with stainless steel fittings.

Whenever possible, sweep-type elbows shall be utilized, in order to reduce friction loss. Thread-in 45's and 90's will be used elsewhere.

Victaulic or rubber couplings shall be used, where necessary, to allow flexing of plumbing, which will prevent damage or loosening of the piping, which can occur with rigid plumbing.

All threaded joints shall have non-hardening type sealant for easy removal for repairs.

All piping, including intake and discharge lines, shall be hydrostatically tested. A vacuum test shall be applied to the pump, plumbing, and valves, to test for leaks. The system shall be tested, and shall show minimum loss of no more than 10 inches of vacuum over a 5 minute period, as required by NFPA section 16.13.6.4.

SYNFLEX **– or Owner Approved Equal–**SUCTION, DISCHARGE, PRESSURE AND CONTROL LINES

Small lines within the pump enclosure shall be constructed from Synflex hose**– or Owner Approved Equal**. Uses include, but are not limited to, such lines as priming control, gauge lines, drain lines, air control valves, pump shift, supplemental cooling, foam flush, and air bleeder valves.

FIRE PUMP & PLUMBING SYSTEM PAINTING

The fire pump and plumbing system shall be painted job color, or the lower color when a two paint scheme is specified. No exceptions.

AKRON **– or Owner Approved Equal–**VALVES

All pump intake and discharge valves shall be AKRON 8000 heavy-duty swing-out series**– or Owner Approved Equal**. The valves shall have an all-brass body with flow-optimizing stainless steel ball, and dual-polymer seats. The valves shall be capable of dual-directional flow, while incorporating a self-locking ball feature, using an automatic friction lock design, and specially designed flow-optimizing stainless steel ball. All stainless steel parts must be 316 grade for increased resistance to corrosion. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valves shall carry a ten (10) year manufacturers warranty. The valve shall be manufactured and assembled
in the United States.

INTAKE RELIEF VALVE

An Elkhart Brass intake relief valve **– or Owner Approved Equal –**shall be installed on the suction side of the pump. The valve shall be the preset type at 125 PSI and is adjustable from 75 to 250 PSI, and shall be designed to prevent vibration from altering the setting. The relief outlet shall be directed below the pump with the discharge terminating in a 2-1/2" male NST connection. The discharge shall be away from the pump operator and labeled "Do Not Cap".

U.L. PUMP & VOLTAGE CERTIFICATION TEST

One (1) certification test shall be performed at the manufacturers on-site testing facility, by Underwriters Laboratories.

The certification shall include at minimum:

- Pumping test - NFPA 16.13.2
- Pumping engine overload test – NFPA 16.13.3
- Pressure control system test - NFPA 16.13.4
- Priming system tests - NFPA 16.13.5
- Vacuum test - NFPA 16.13.6
- Water tank-to-pump flow test - NFPA 16.13.7
- If tire pump is driven by the chassis engine: engine speed advancement interlock test – NFPA 16.13.8
- Gauge and flowmeter test – NFPA 16.13.9
- Low voltage
- Line voltage

A test plate shall be provided at the pump operator's position that gives the rated discharges and pressures, together with the speed of the engine, as determined by the certification test. The plate shall be completely engraved with all information at the factory, and attached to the vehicle prior to delivery. The original U.L. certificate shall be provided upon acceptance and payment of the apparatus in full.

STEAMER INLETS

Two (2) 6" steamer inlets shall be provided on the pump panels, one (1) on the left side and one (1) on the right side.

Both inlets shall have screens and chrome caps with long handles.

5" REAR SUCTION

A 5" gated suction inlet shall be located at the rear of the unit, right side.

This line shall have drains located, where necessary, at the lowest points of the plumbing.

5" stainless steel piping shall be run from the rear of the unit to the suction side of the pump.

A 6" Hale MIV-E electric-actuated butterfly valve **– or Owner Approved Equal –**shall be installed at the pump and controlled at the operator's panel.

Suction shall exit the right rear of the unit with 6" NST adapter, removable screen, and long handle chrome plated cap.

SUCTION - LEFT SIDE

One (1) 2-1/2" suction valve shall be installed on the left side of the unit. The valve body shall be mounted behind the pump panel, with a 2-1/2" NST chrome inlet swivel, chrome plug and chain, and removable inlet strainer.

TANK TO PUMP

There shall be one (1) 3" gated tank to pump line, piped to the tank sump.

Piping from the sump to the valve shall be 4" diameter.

The line shall be plumbed directly into the back of the pump for maximum efficiency.

A full-flow, inline ball valve, with check valve, shall be provided to prevent accidental pressurization of the water tank through the pump connection.

A control with a function plate will be located on the operator's panel.

TANK FILL - 2-1/2"

There shall be a 2-1/2" tank refill line installed, with a 2-1/2" inline valve.

Valve shall be controlled at the pump operator's panel, and will be clearly marked "TANK REFILL/PUMP COOLER".

DUNNAGE COMPARTMENT

The remaining area behind the crosslay(s) shall be used for additional storage space.

DUNNAGE COMPARTMENT

Each side of the dunnage compartment shall be enclosed with 12 gauge satin-finish stainless steel.

HORIZONTAL SPEEDLAYS

The speedlays shall be fabricated of 12 gauge stainless steel, with stainless steel swirl finish side panels and floors. Floors shall be lined with poly-plas matting.

Two (2) speedlays shall be provided under the operator's panel, divided as follows:

- Top section: Capable of holding 200 ft. of 1.75" hose. Piping and valve to be 2" with 1.5"swivel.
- Bottom section: Capable of holding 200 ft. of 1.75" hose. Piping and valve to be 2" with 1.5" swivel.

The horizontal speedlays shall be designed as an integral part of the pump house design, and shall be located directly forward of the pump installation for quick attack deployment.

Vertical and horizontal stainless steel rollers with nylon guides shall be installed on each side of the speedlays.

A 12 gauge stainless steel vertical retainer will be installed at the front of each speedlay, to secure the hose but allow for easy repacking.

Control handles shall be provided on the pump operator's panel.

SPEEDLAY NYLON CARGO FLAPS

Black nylon cargo netting flaps shall be installed on each end of the crosslay bins to retain the hose load. The flaps shall be secured with 2" wide straps with velcro fasteners.

Meets NFPA 15.10.5 - Any hose storage area shall be equipped with a positive means to prevent unintentional deployment of the hose from the top, side, front, and rear of the hose storage area, while the apparatus is underway in normal operations.

FRONT BUMPER DISCHARGE

One (1) discharge shall be piped to the left front bumper with 2.5" piping and 2.5" valve.

Discharge shall terminate above the gravel shield, to the left of the sump box, with a Trident 2.5" female NPT x 2.5" male NST chrome swivel elbow– **or Owner Approved Equal**.

A control handle shall be provided on the pump operator's panel.

SUMP BOX

The rear step running board shall have a stainless steel sump box, as large as possible.

The sump box shall have matting and drain holes in the floor of the compartment.

It shall be capable of holding two 25' sections of 3" D. J. hose– **or Owner Approved Equal –** with hydrant gate valve. Tray shall have a divider across from left to right to separate the two hoses.

A hinged lid shall be provided.

DISCHARGES - 2.5" LEFT SIDE

Two (2) 2.5" discharges shall be located on the left side pump panel, and shall be controlled from the operator's panel.

Each discharge shall terminate with a 2.5" NST 30 degree turn-down with chrome cap and retainer chain.

DISCHARGE - 2.5" RIGHT SIDE

One (1) 2.5" discharge shall be located on the right side pump panel, and shall be controlled from the operator's panel.

The discharge shall terminate with a 2.5" NST 30 degree turn-down with chrome cap and retainer chain.

DISCHARGE - 3" RIGHT SIDE - 5" STORZ

One (1) 3" discharge shall be located on the right side pump panel, and shall be controlled from the operator's panel.

The discharge shall terminate with a 3" NST x 5" 30 degree Storz adapter, with blind cap and retainer chain.

DISCHARGE - 2.5" RIGHT REAR HOSEBED

One (1) 2.5" discharge shall be piped to the right rear of the hose bed, and shall be controlled from the operator's panel.

The discharge shall terminate with a 2.5" NST 30 degree turn-down, with chrome cap and retainer chain.

DISCHARGE - 3" DECK GUN

One (1) 3" deck gun discharge shall be plumbed to center of the dunnage area over the pump.

Piping will be firmly supported and braced.

The discharge shall be controlled at the operator's panel.

Discharge shall terminate with 4-bolt flange.

AKRON **– or Owner Approved Equal–**SLO-CLOZ

An Akron Slo-Cloz device**– or Owner Approved Equal–** shall be provided on each 3" discharge valve, to limit the opening of the valve to no faster than 3 seconds, per N.F.P.A. specifications.

The hydraulic device shall be operable from -40 deg. F to 140 deg. F.

The device shall be made of corrosion-resistant materials, and shall not add more than 1-1/2" to the valve height.

PUMP MASTER DRAIN

The pump shall be equipped with a Trident master drain that will have the capacity to drain all lines and main pump at the same time**– or Owner Approved Equal** The master drain will be mounted on the left side panel, and will be readily accessible.

DRAIN VALVES

All side discharges and auxiliary suction drain valves shall be Innovative Controls 3/4" ball brass drain valves with chrome-plated lift lever handles and ergonomic grips. Each lift handle grip shall feature built-in color-coding labels and a verbiage tag, also supplied by Innovative Controls, identifying each valve. The colors labels shall also include valve open and close verbiage. The drain valves shall located in the lower portion of the pump panels. All other discharges shall have Class 1 brand 3/4" automatic bleeder drains.

FOAMPRO 1600 or **Owner Approved Equal**

The apparatus shall be equipped with an electronic, fully-utomatic, variable-peed, direct- njection, and discharge side foam proportioning system. The system shall be capable of handling Class A foam concentrate. The foam proportioning operation shall be based on direct measurement of water flows, and remain consistent within the specified flows and pressures. System must be capable of delivering accuracy to within 5% of calibrated settings over the advertised operation range when installed according to factory standards. The system shall be equipped with a control module,suitable for installation on the pump panel. Incorporated within the motor driver,shall be a microprocessor that receives input from the system flowmeter, while also monitoring foam concentrate pump output. This compares values to ensure that the operator's preset is proportional to the amount of foam concentrate injected into the discharge side of the fire pump.

A paddlewheel-type flowmeter shall be installed in the discharge system specified to be "foam capable." A simulated flow feature shall be incorporated into the motor driver to simulate an approximate flow value of 100 gpm. This feature is to be engaged or disengaged with a momentary switch,and will automatically disengage when the main system switch is turned off.

The control module shall enable the pump operator to:

- Activate the foam proportioning system
- Select proportioning rates from 0.1% to 1.0%
- See a "Low Concentrate" warning light flash when the foam tank runs low.
- In two minutes, if foam concentrate is not added to the tank, shut the foam concentrate pump down.

A 12 volt, electric-drive, positive-displacement plunger pump shall be provided. The pump capacity shall be from 0.1 gpm (0.38 L/min) to 1.7 gpm (6.4 L/min) at 200 psi (13.8 BAR), with a maximum operating pressure up to 400 psi (27.6 BAR). The pump shall have the capability to draw 3 feet of lift. The system will draw a maximum of 30 amps @ 12 VDC or 15 amps @ 24 VDC. The motor shall be controlled by the microprocessor, (mounted to the base of the pump). It shall receive signals from the control module, and power the 1/3 hp (.25 Kw) electric motor in a variable-speed duty cycle, to ensure that the correct proportion of concentrate is injected into the water stream. A full-flow check valve shall be provided in the discharge piping, to prevent foam contamination of fire pump and water tank. A 12 psi (.83 BAR) opening pressure check valve shall be provided in concentrate line.

Components of the complete proportioning system as described above shall include:

- Operator control module
- Paddlewheel flowmeter
- Pump and electric motor/motor driver
- Wiring harnesses
- Low level tank switch
- Foam tank
- Foam injection check valve

- Main waterway check valve

An installation and operation manual shall be provided for the unit, along with a one-year limited warranty by the manufacturer. The system must be installed and calibrated by a certified FoamPro**– or Owner Approved Equal –** dealer.
The system design shall have passed environmental testing which simulates heavy use on off-road mobile apparatus. Testing shall have been conducted in accordance to SAE standards.

The foam capable discharges shall be: both speedlays

FoamPro**– or Owner Approved Equal–** is not responsible for product failure resulting from improper maintenance or operation. FoamPro**– or Owner Approved Equal –** is responsible only to the limits stated in the product warranty. Product specifications contained in this material are subject to change without notice.

INDEPENDENT PUMP MODULE

The pump module shall be a self-supported structure, mounted independently from the body and chassis cab. The pump module shall be fabricated and constructed from the same material as the body. The design shall allow for normal frame deflection, without imposing stress on the pump module structure. The pump module shall consist of a welded, tubular, stainless steel framework, properly braced, to withstand chassis frame flexing. The pump module shall be bolted to the chassis frame rails.

TOP CONSOLE MOUNTED OPERATOR'S PANEL

The pump house shall be a properly supported structure, mounted between the body and chassis cab, and shall be bolted to the chassis frame rails using high-grade U-bolts.

The pump, and all of the pump mounted valves, shall be completely enclosed by the pump house design.

Left and right side pump house panels shall consist of double upper, vertically-hinged pump access doors. The doors will be swing-open style with quick-opening door latches.

The lower left and right side panels shall contain the specified side discharges, inlets, and line bleeders.

The side panels shall be fastened to the pump house with stainless steel bolts, and shall be completely removable.

All panels shall be brush-finished, 12-gauge, 304 stainless steel.

The top of the pump house shall consist of a panel containing all required gauges and controls.

All valve controls, unless otherwise stated, shall be mounted in a single line across the lower portion of the control panel. The apparatus pump panel shall be equipped with Innovative Controls top mount valve controls.

The ergonomically-designed T-handle shall be polished stainless steel with recessed labels for color-coding and verbiage. The patented auto-locking control rod and gear housing shall be polished stainless steel, and shall provide a true positive lock that will eliminate valve drift. Brass and Teflon-impregnated bushings shall minimize rod deflection, never need lubrication, and ensure consistent long-term operation.

WALKWAY

A 28" wide walkway shall be provided between the cab and the operator's panel, with proper cab clearance.

It shall be fabricated of stainless steel channel and tubing. The walkway shall be covered with aluminum diamond plate.

IDENTIFICATION LABELS FOR PUMP PANEL

Innovative Controls verbiage label bezels shall be installed. The bezel assemblies will be used to identify apparatus components. These labels shall be designed and manufactured to withstand the specified apparatus service environment.

The verbiage label bezel assemblies shall include a chrome-plated, panel-mount bezel with durable, easy-to-read, UV-resistant, polycarbonate inserts, featuring the specified verbiage and color coding. The UV-resistant polycarbonate verbiage and color inserts shall be sub-surface screen printed to eliminate the possibility of wear and protect the inks from fading. Both the insert labels and bezel shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards.

TOP CONSOLE OPERATORS PANEL

The following items shall be located on the top console pump panel:

- Individual 0-400# compound discharge gauges shall be provided for each 1.5" or larger discharge
- One (1) -30 to 400 psi master pressure gauge
- One (1) -30 to 400 psi master vacuum gauge
- One (1) engine oil pressure gauge with audible & visual alarm
- One (1) engine water temperature gauge with audible & visual alarm
- One (1) waterproof engine tachometer
- One (1) engine voltmeter
- Two (2) UL test connections
- One (1) master pump house lighting switch
- One (1) engine throttle control
- One (1) relief valve control and open indicator light
- One (1) primer control

- All discharge controls
- One (1) tank fill/pump bypass control
- One (1) tank to pump valve control
- One (1) pump ENGAGED indicator light
- One liquid level meter with sensor in the water tank

The following items will be located on the left hand pump panel:

- One pump certification plate

RUNNING BOARDS

Running boards shall be provided on each side of the pump module, which shall extend from the front of the side compartments, forward to the back of the cab. Running boards shall be covered with 1/8" aluminum diamond plate. The inboard edge shall be formed upward 1-1/2", to provide a kick strip along the bottom of the pump panel. The outer edge shall be bent downward to provide a safety rail.

Running boards are supported by 1.50" structural stainless steel tubing, welded to the pump house framing, and shall be able to support a minimum of 500 pounds. The running board stepping surface will comply with the latest version of NFPA 1901.

AUXILIARY PUMP PANEL ACCESS STEPS - STAINLESS STEEL TUBING

An auxiliary step shall be provided under each pump panel running board, directly below the pump panel walkway. The step shall be fabricated of 1.5" stainless steel tubing with stainless grating step surface. The step surface shall meet NFPA requirements.

TOP MOUNT PUMP PANEL LIGHTING

The top-mount pump panel shall be illuminated by seven (7) TecNiq (model E10-W000-1) 6.00" LED lights with clear lens– **or Owner Approved Equal.**

Lights shall be mounted across the top of the gauge panel, and shall be protected by a full-width, polished stainless steel shield.

Lights are controlled by a panel-mounted master light switch.

One (1) top-mount pump panel light shall illuminate when the pump is shifted into gear from inside the cab, affording the operator illumination when first approaching the control panel.

4.0" INNOVATIVE CONTROLS MASTER GAUGES

The master intake and master discharge gauges shall be 4” diameter Innovative Controls pressure gauges. Each gauge shall have a one-piece nylon case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. Clear, scratch-resistant, molded crystals with captive O-ring seals shall be used to ensure distortion-free viewing, and to seal the gauge. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation, and ensure proper operation from –40°F to +160°F. Each gauge shall meet ANSI B40.1 Grade 1A requirements with an accuracy of +/- 1%, full scale, and include a size-appropriate, phosphorous-bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauges shall be installed into decorative, chrome-plated mounting bezels that incorporate valve-identifying verbiage.

The master gauges shall be installed on the pump panel, no more than 6 inches apart. The gauge on the left shall be the master pump intake gauge, and shall display a range from -30 to 400 psi, with black graphics on a white background. The gauge on the right shall be the master pump discharge gauge, and shall display a range from -30 to 400 psi, with black graphics on a white background.

2-1/2'' INNOVATIVE CONTROLS GAUGES

The valve discharge gauges shall be 2 ½ ” diameter Innovative Controls pressure gauges. Each gauge shall have a one-piece nylon case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. Clear, scratch-resistant, molded crystals with captive O-ring seals shall be used to ensure distortion free viewing and to seal the gauge. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

Each gauge shall exceed ANSI B40.1 Grade B requirements, with an accuracy of +/- 1.5% , full scale, and shall include a size-appropriate, phosphorous-bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy. A polished stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauges shall be installed into decorative, chrome-plated, mounting bezels that incorporate valve-identifying verbiage and color labels. The gauges shall display a range from 0 to 400 psi, with black graphics on a white background.

WATER TANK VOLUME INDICATOR

Fire Research TankVision Pro model WLA300-A00 tank indicator kit **– or Owner Approved Equal –**shall be installed. The kit shall include an electronic indicator module, a pressure sensor, and a 10' sensor cable. The indicator shall show the volume of water in the tank on nine (9) easy to see super bright RGB LEDs. A wide view lens over the LEDs shall provide

for a viewing angle of 180 degrees. The indicator case shall be waterproof, manufactured of Polycarbonate/Nylon material, and have a distinctive blue label.

The program features shall be accessed from the front of the indicator module. The program shall support self-diagnostics capabilities, self-calibration, six (6) programmable colored light patterns to display tank volume, adjustable brightness control levels and a datalink to connect remote indicators. Low water warnings shall include flashing LEDs at 1/4 tank, down chasing LEDs when the tank is almost empty, and an output for an audio alarm.

The indicator shall receive an input signal from an electronic pressure sensor. The sensor shall be mounted from the outside of the water tank near the bottom. No probe shall be placed on the interior of the tank. Wiring shall be weather resistant and have automotive type plug-in connectors.

Level meter shall be installed on the pump operator's panel.

CAB MOUNTED WATER TANK INDICATOR

Fire Research TankVision model WLA205-A00 miniature tank indicator– **or Owner Approved Equal –** shall be installed in the cab. The indicator shall show the volume of water in the tank on five (5) easy to see super bright LEDs. A wide view lens over the LEDs shall provide for a viewing angle of 180 degrees. The indicator case shall be manufactured of Polycarbonate material with an integrated lens and have a distinctive blue label.

The miniature indicator shall receive input information over a single wire from a Fire Research TankVision primary indicator model WLA200-A00, WLA300-A00 or WLA400-A00– **or Owner Approved Equal**.

Location in cab of water tank indicator shall be in the cab in easy view of the driver.

CLASS A FOAM TANK VOLUME INDICATOR

Fire Research TankVision Pro model WLA360-A00 tank indicator kit– **or Owner Approved Equal –** shall be installed. The kit shall include an electronic indicator module, a pressure sensor, a 10' sensor cable and a tank vent. The indicator shall show the volume of Class A foam concentrate in the tank on nine (9) easy to see super bright RGB LEDs. A wide view lens over the LEDs shall provide for a viewing angle of 180 degrees. The indicator case shall be waterproof, manufactured of Polycarbonate/Nylon material, and have a distinctive green label.

The program features shall be accessed from the front of the indicator module. The program shall support self-diagnostics capabilities, self-calibration, six (6) programmable colored light patterns to display tank volume, adjustable brightness control levels and a datalink to connect remote indicators. Low water warnings shall include flashing LEDs at 1/4 tank, down chasing LEDs when the tank is almost empty, and an output for an audio alarm.

The indicator shall receive an input signal from an electronic pressure sensor. The sensor shall be mounted from the outside of the foam tank near the bottom. No probe shall be placed on the interior of the tank. Wiring shall be weather resistant and have automotive type plug-in connectors.

Location of foam tank indicator shall be:

WHELEN TANK LEVEL LIGHTS,

There shall be three (3) Whelen Strip-Light Plus XL tank lights **– or Owner Approved Equal–**surface mounted within a chrome bezel. Lights will be mounted vertically, one (1) on each side of the body, and one (1) on the rear of the body.

The light strips shall feature four (4) colors of LED lights to indicate the fluid level of a tank. The lights shall change in color to indicate the water level of the tank in ¼ tank increments. The colors shall change from green, indicating a full tank, to blue, amber, and red as the tank level drops.

2-1/2" REAR DIRECT TANK FILL

One (1) 2.5" Akron Brass style 8825 valve **– or Owner Approved Equal –**shall be provided. The fill shall and terminate with a 2.50" 30-degree chrome elbow with chrome plug and retainer chain. A 3/4" bleeder will be installed.

The valve will be installed on the rear of the tank, to the left of the rear dump valve.

2-1/2" REAR DIRECT TANK FILL

One (1) 2.5" Akron Brass style 8825 valve **– or Owner Approved Equal–**provided. The fill shall terminate with a 2.50" 30- degree chrome elbow with chrome plug and retainer chain. A 3/4" bleeder will be installed.

The valve will be installed on the rear of the tank, to the right of the rear dump valve.

DUMP VALVE-10" NEWTON ELECTRIC ACTIVATED
or **Owner Approved Equal**

One (1) Newton model 1080-34C 10" square stainless steel dump valve **– or Owner Approved Equal–**shall be provided and installed, centered on the rear of the unit, in the lowest portion of the tank. The valve will be electric-activated with two (2) control switches. Switches shall be located:

- One (1) in the cab
- One (1) on the rear face of the left/rear compartment, above the rear stop/turn/tail light cluster.

MANUAL SLIDE EXTENSION

A Newton model 4036-20-34 manual stainless steel slide extension shall be installed on the rear Newton dump valve. The extension can extend up to 20" beyond the end of the valve or **Owner Approved Equal**

WATER TANK

The UPF poly water tank shall be constructed of PT3™ polypropylene material. This material shall be a non-corrosive, stress-relieved thermoplastic and shall be UV-stabilized for maximum protection. The tank shell thickness may vary depending on the application, and may range from ½" to 1" as required. Internal baffles are generally 3/8" in thickness.

The tank capacity shall be 1800 gallons, and will be equipped with a 6" vent/overflow.

TANK CONSTRUCTION

The poly water tank shall be of a specific configuration, and is designed to be completely independent of the body and compartments. Joints and seams shall be fused using nitrogen gas, as required and tested, for maximum strength and integrity. The tank construction shall include PolyProSeal™**– or Owner Approved Equal–** technology, wherein a sealant shall be installed between the plastic components prior to being fusion-welded. This sealing method will provide a liquid barrier, offering leak protection in the event of a weld compromise. The top of the booster tank is fitted with a removable lifting assembly, designed to facilitate tank removal. The transverse and longitudinal swash partitions shall be manufactured of a minimum of 3/8" PT3™ polypropylene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another, and are completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with
NFPA 1901. The walls shall be welded to the floor of the tank, providing maximum strength as part of the tank's unique Full Floor Design™. Tolerances in design allow for a maximum variation of 1/8" on all dimensions.

CAPACITY CERTIFICATION

All water tanks shall be tested and certified as to capacity on a calibrated and certified tilting scale. Each tank shall be weighed empty and full to provide precise fluid capacity. Each Poly-Tank® III or **Owner Approved Equal** is delivered with a Certificate of Capacity, delineating the weight empty and full, and the resultant capacity based on weight.

TANKNOLOGY™ TAG

A tag shall be installed on the apparatus, in a convenient location, which shall contain pertinent information including a QR code readable by commercially available smart phones. The information contained on the tag shall include:

- The capacity of the water and foam(s)
- The maximum fill and pressure rates
- The serial number of the tank
- The date of manufacture
- Tthe tank manufacturer and contact information

The QR code will allow the user to connect with the tank manufacturer for additional information and assistance.

TANK LID

The tank cover shall be constructed of 1/2" thick PT3™ polypropylene and shall be UV-stabilized to incorporate a multi-piece locking design which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 3/8" from the top of the tank, and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold-downs consisting of 2" minimum polypropylene dowels, spaced a maximum of 40" apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall accommodate the necessary lifting hardware.

TANK FILL TOWER

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" PT3™ polypropylene and shall be a minimum dimension of 12" x 12" outer perimeter. The fill tower shall be blue in color, indicating that it is a water-only fill tower. The tower shall be located in the left front corner of the tank unless otherwise specified by the tank manufacturer to the purchaser. The tower shall have a 1/4" thick removable polypropylene screen and a PT3 polypropylene hinged cover. The capacity of the tank shall be engraved on the top of the fill tower lid. Inside the fill tower there shall be a combination vent/overflow pipe.

OVERFLOW AND VENT PIPE

The fill tower shall be fitted with an integral 4” ID schedule 40 P.V.C. combination overflow/vent pipe that is designed to run through the tank, and shall be piped to discharge water behind the rear wheels, as required in NFPA 1901, so as to not interfere with rear tire traction.

TANK SUMP

There shall be one (1) sump, standard, per tank. The sump shall be constructed of a minimum of 1/2" PT3™ polypropylene and be located in the left/front quarter of the tank, unless specified otherwise. On all tanks that require a front suction, a 3" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3" N.P.T. threaded outlet on the bottom for a drain plug, per NFPA. This shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 3" above the inside floor.

TANK OUTLETS

There will be two (2) standard tank outlets:

- One (1) for the tank-to-pump suction line, which shall be a minimum of 4” coupling and
- One (1) for a tank fill line, which shall be a minimum of a 2” N.P.T. coupling.

All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank.

WATER TANK MOUNTING

The tank shall rest on the body cross members, spaced a maximum of 22” apart, and shall be isolated from the cross members through the use of ¼” to 1/2” rubber, 2-1/2” wide. The tank shall sit, cradle-mounted, using four (4) stainless steel corner angles 3” x 3” x ¼” thick. Angles are welded directly to the body cross members. The angles shall keep the tank from shifting left to right or front to rear. The angles are also isolated from the tank through the use of ¼” to ½” rubber. The tank is designed on the free-floating suspension principle, and shall not require the use of hold downs. The tank shall be completely removable without disturbing or dismantling the apparatus body structure. The body or hose bed cross braces shall act as water tank retainers.

20 GALLON FOAM CELL

A 20 gallon Class "A" foam cell shall be designed integral to the water tank. The foam cell shall have a separate fill tower that is a different color than the water tank fill tower. The tank shall be configured with appropriate inlets and outlets for the specified foam application.

STAINLESS STEEL BODY & COMPARTMENT CONSTRUCTION

The complete apparatus body and subframe shall be fabricated of 12 gauge, type-304-grade stainless steel sheeting with a tensile strength of 87,000 psi and a yield strength of 39,000 psi.

All body and compartment components shall be break-form design. Compartments are constructed of 12 gauge, type 304 stainless steel. This shall include compartment floors, side walls, and ceilings. No Exception. Compartments shall be formed from a single sheet of metal when possible. The exterior of the compartments shall be solid-seam welded. The corner seams shall be caulked with gray silicone caulking. All burrs shall be removed to eliminate sharp edges.

Interiors of compartments are to be left natural stainless steel with a swirl finish applied to give a lasting and pleasing appearance.

COMPARTMENT SUPPORTS

Compartment floor supports shall be provided, fabricated of 12 gauge stainless steel. Support members measuring 2.00" x 4.00" shall be installed under the compartment floors. The supports shall be formed, U-shaped sections that will extend the full width beneath the compartment floors. The upper body walkway floor will be supported in a similar fashion.

STAINLESS STEEL SUBFRAME

A 1.50" x 3.00" stainless steel tubular subframe shall be fabricated to support the body and tank. Structural stainless steel rails shall run the full length of the body, across the top of the chassis frame rails. Stainless steel cross members measuring 3.00" shall be utilized to ensure rigidity, with cross members being spaced no more than 24" apart.

The subframe and cross members shall be MIG-welded. All compartments and all stainless steel sheeting shall be TIG-welded with 308 stainless steel filler wire.

The complete body structure shall be secured to the chassis frame rails with high-grade, 5/8" diameter U-bolts.

Heavy duty rubber sill measuring 1.00" x 3.00"will be installed between the body subframe and chassis frame rails to prevent stress on the body and tank components. The rubber sill shall be retained by a full length stainless steel channel.

STEPPING, STANDING, & WALKING SURFACES

All stepping, standing, and walking surfaces on the body shall meet NFPA 1901 anti-slip standards.

WHEEL WELLS

Twelve gauge stainless steel wheel wells shall be an integral part of the body construction.

Wheel wells and cabinetry are to be designed so road debris will not be trapped on top of the cabinets.

Full, one-piece, circular, 24"-deep stainless steel wheel well liners shall be installed. The fender flares shall be bright polished stainless steel, and shall be attached to the wheel well using stainless steel bolts.

WIRING ACCESS PANELS

Wiring access panels shall be provided in the body interior corner compartments. The panels shall be bolted in place to allow easy removal for service.

FUEL TANK ACCESS

If the apparatus is equipped with a rear, frame-mounted fuel tank, a removable, bolt-on access panel will be provided in the rear compartment wall.

REMOVAL OF BODY

The completed body with all related parts will be removable in its entirety, and shall accompany the water tank when removed.

FASTENERS

All fasteners used in securing components to the body shall be type 304 stainless steel.

COMPARTMENT VENTS

Compartments shall have a minimum of two (2) 4" louvered stainless steel vents per compartment. They shall be installed in the rear wall of each compartment in a fashion
to prevent foreign matter and water from entering.

COMPARTMENT DRAINS

Duckbill-type rubber floor drains will be installed in the corners of the lower compartment floors.

PUMPER BODY - ROLL-UP DOORS - HYDRAULIC FOLDING TANK RACK LEFT

SIDE COMPARTMENTS WITH RESCUE-STYLE HIGH SIDE

L1: 69.00” High x 13.00/28.00” Deep x 60.00” Wide
Door Opening: 59.00” High x 54.00” Wide

L2: 36.00” High x 13.00” Deep x 64.00” Wide
Door Opening: 26.00” High x 56.50” Wide

L3: 69.00” High x 13.00/28.00” Deep x 40.00” Wide
Door Opening: 59.00” High x 34.00” Wide

RIGHT SIDE COMPARTMENTS WITH RESCUE-STYLE HIGH SIDE

R1: 69.00” High x 13.00/28.00” Deep x 60.00” Wide
Door Opening: 59.00” High x 51.50” Wide

R2: 36.00” High x 13.00” Deep x 64.00” Wide
Door Opening: 26.50” High x 56.50” Wide

R3: 69.00” High x 13.00/28.00” Deep x 40.00” Wide
Door Opening: 59.00” High x 31.50” Wide

SQUARE BACK BODY DESIGN

The rear side body compartments and the body side walls shall extend all the way to the rear of the apparatus, and shall be a squared-off design.

PHOENIX NOTCH

All compartment floors shall have a "Phoenix notch" to provide a true sweep-out compartment. The leading edge of the compartment floor shall have a 1" recess below the compartment floor to allow the rollup door to close below the compartment floor level. No Exceptions.

REAR BUMPER

The rear bumper shall be fabricated of 1.50" x 1.50" and 1.50" x 3.00" structural stainless steel tubing. The bumper shall be welded to the rear side body compartments.

The rear bumper shall be recessed 12" between the rear side body compartments, and extend 6.00" beyond the rear side body compartments. The depth of the bumper in the recessed area, from the rear compartment to the very end of the bumper, shall be 18.00" deep. The recessed area of the bumper shall be 40.00" wide.

BUMPER STEP SURFACE

The bumper step shall be covered with aluminum diamond plate, with welded end caps. The bumper stepping surface will comply with the latest version of NFPA 1901.

TOP SIDE BODY TRIM

The top of all side body compartments shall be covered with aluminum diamond plate.

Top overlay edges shall be angled downward, and shall extended over the outer body panel approximately 1.00".

REAR BODY TRIM

Any areas on the rear not covered with reflective chevron stripping shall be covered with aluminum diamond plate.

FRONT COMPARTMENT TRIM

Front exterior wall of the front compartments shall be covered with aluminum diamond plate.

SIDE BODY POST TRIM

Side body support posts shall be covered with aluminum diamond plate.

PUMP HOUSE TRIM

The front of the pump house shall be covered with aluminum diamond plate.

STAINLESS STEEL RUB RAILS

Rub rails shall be provided and installed below each side compartment. The rub rail assembly shall be constructed of 1.00" wide x 1.50" high, heavy-duty, 14-gauge, 304-grade stainless steel tubing with black end caps and will be DA finished. Rub rails shall be bolted to the lower exterior edge of the apparatus body, with 0.50" nylon spacers installed between the body and the rub rail.

HOSE BED

A stainless steel hose bed with swirl finish shall be located above the water tank. The hose bed front and side walls shall be free of all sharp edges, to prevent hose damage. There shall be two (2) removable floor sections, constructed of fiberglass grating, model T-3500, 1" "T" bars with 35% open area. This will allow for proper ventilation and drainage of hose.

HOSE BED DIVIDER

One (1) full-length, adjustable hose bed divider shall be located in the hose bed, and shall be fully-adjustable by means of stainless steel uni-strut tracking. Tracking will be located at the front and rear of the hose bed.

The divider shall be one piece, and shall be constructed of 1/4" extruded aluminum. The divider's bottom T-bar shall extend the full length of the hose bed. A smooth, 1/2" diameter top edge is provided to prevent damage to hose.

The divider shall be bolted in place with stainless steel fasteners, and shall be easily adjusted from side to side with simple hand tools.

HOSE BED CAPACITY

The hose bed shall be capable of holding the following hose (listed left-to-right):

1200 Feet of 3.00" DJ hose
400 Feet of 2.50" DJ hose

HOSE BED DUNNAGE AREA

A stainless steel vertical bulkhead with a top edge double return flange shall be installed at the front of the hose bed. The bulkhead shall begin at the front wall of the hose bed, inboard of the ladder compartment and extend toward the rear, past the water and foam tank fill towers. It shall then extend toward the right side of the truck to end at the right side hose bed wall. This divider will form a storage area that is separated from the hose bed.

The rear face of the bulkhead shall serve as a mounting surface for the hose bed dividers, resulting in the ability to move any hose bed divider across the entire width of the hose bed.

HOSEBED TARP

A black vinyl hosebed cover shall be provided. The front edge of the cover shall attach with Velcro and twist-lock fasteners. The sides shall attach with shock-cord fasteners on the tarp and stainless steel hooks on thebody sides. The a rear edge will consist of a weighted flap with straps.

HAND RAILS

Access hand rails shall be constructed of 1-1/4" in diameter extruded aluminum tubing with ribbed rubber inserts. Access rail escutcheons and brackets shall be chrome-plated, and shall be attached with stainless steel bolts. Anchoring of posts and framing members for handrails of all types shall capable of withstanding a load of at least 225 pounds, applied in any direction, at any point along the rail.

Hand rails and handholds shall be constructed so that three points of contact (two hands and one foot, or one hand and two feet) can be maintained at all times while ascending and descending.

VERTICAL HAND RAILS

Two (2) 48" long hand rails shall be mounted vertically, at the rear of the apparatus, one (1) on each side of the rear compartment.

HORIZONTAL HAND RAILS

One (1) 72" long hand rail shall be mounted horizontally just below the hosebed.

FOLDING ACCESS STEPS

Six (6) Innovative Controls folding steps shall be provided and installed. Each step shall be designed to exceed the strength, load, and traction requirements of NFPA. Each step shall be chrome-plated, and shall include a molded gasket to help prevent water ingress and keep the step mount from damaging painted surfaces. The step shall include a drain at the bottom to allow any water to escape the assembly.

The folding step shall be spring-loaded to hold the step in the upright, stowed position while in transit, and when not in use.

The step shall include a white LED step light.

Location: Rear of unit, both sides to allow easy access to the hose bed.

ADDITIONAL FOLDING ACCESS STEPS

Three (3) additional Innovative Controls folding steps shall be provided and installed. Each step shall be designed to exceed the strength, load, and traction requirements of NFPA. Each step shall be chrome-plated, and shall include a molded gasket to help prevent water ingress and keep the step mount from damaging painted surfaces. The step shall include a drain at the bottom to allow any water to escape the assembly.

The folding step shall be spring-loaded to hold the step in the upright, stowed position while in transit, and when not in use.

The step shall include a white LED step light.

Location to be determined at pre-paint inspection.

SUCTION HOSE MOUNTING BRACKETS

Two (2) aluminum trays shall be provided to hold 6" x 10' hard suction hoses. One (1) shall be a V-Tray, mounted on the left side over the upper compartments. The other one (1) shall be a C-Tray mounted on the powered folding tank rack.

The hose shall be held in place with quick release holders.

HYDRAULIC FOLDING TANK RACK

The folding tank shall be mounted above the right side upper compartments in a specially- designed, swing-down cradle.

The cradle shall be electric/hydraulic operated. Dual hydraulic actuators will be furnished, one at each end of the bracket at the bottom of the arms. Both pivot points will be a bolt-on spline connection.

The hydraulic actuators shall be operated by an independent hydraulic pump, powered off the chassis 12 volt power system. The bracket controls will be located in the right side pump panel, so that the operator will be in full view of the area in which the ladders will be lowered.

The electric motor control shall have a master switch, and also be interlocked with a safety lock, to prevent travel operation if a compartment door in the bracket's travel path is open.

The folding tank will be contained withn an aluminum compartment with a hinged rear access door.

Operating range of travel is from 0° to 90° on the truck, with 90° being the travel position.

Folding tank rack warning shall be provided through the hazard light located in the cab to show when the bracket is in the unlocked position. Additional flashing lights are provided on each end of the bracket, and a

flashing light above the controls also show when the bracket is in the unlocked position. A rear audible alarm shall be provided to signal when the bracket is in motion.

The outward ends of the rack that protrude beyond the body of the apparatus shall have reflective material to indicate a hazard or an obstruction.

LADDER BRACKET IN HOSEBED

The extension ladder and roof ladder shall be mounted in the right side portion of the hose bed.

A front nose box and rear latching mechanism will be provided to secure the ladders. The roof ladder will be mounted on top of the extension ladder.

PIKE POLE TUBE STYLE BRACKET

Two (2) stainless steel tubes shall be provided for storing pike poles in the hose bed ladder compartment.

Quick-release fasteners shall be provided to secure the pike poles.

AIR BOTTLE STORAGE COMPARTMENT (DOUBLE COMPARTMENT)

One (1) spare air bottle compartment shall be provided in the front portion of the driver side rear wheel well area. The compartment will be capable of holding two (2) spare air bottles. The compartment shall be fabricated of stainless steel, and shall be lined to prevent vibration. The compartment shall have a drain hole in the floor.

COMPARTMENT DOORS

The wheel well compartments, where specified, will have vertically-hinged, painted, stainless steel doors with Southco #E3-17-22 all-stainless-steel door latches **or Owner Approved Equal**. The doors shall be labeled: "SPARE SCBA CYLINDER". Doors shall be wired to the door ajar circuit.

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POLY BOARD MOUNTING BOARD

1/2" textured black poly board will installed on the back wall of the specified compartment to allow for equipment mounting. The board will be spaced 1/2" from the back wall of the compartment.

Quantity: 1
Location: L1 High side

FLOOR MATTING

All compartment floors shall be lined with black Mateflex 13" X 13" x 9/16" interlocking tiles **– or Owner Approved Equal–**with tapered edging at the front compartment opening.

ROLL-UP DOOR

All compartment doors shall be R•O•M Series IV roll-up shutter doors with satin finish. Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized 6063 T6 aluminum.

Shutter slats will feature a double-wall extrusion 0.315” thick with a concave interior surface to minimize the possiblity of loose equipment jamming the shutter door closed. Shutter slats will feature an interlocking end

shoe to prevent side-to-side binding of the shutter door during operation. Slats must have interlocking joints with an inverted locking flange. Slat inner seal shall be a one-piece PVC extrusion; seal design will be such to prevent metal-to-metal contact while minimizing dirt and water from entering the compartment.

Shutter door track shall be one-piece design with integral overlapping flange to provide a clean, finished look without the need of caulk. Door track shall feature an extruded Santoprene**– or Owner Approved Equal–** rubber, double-lip, low-profile side seal with a silicone co-extruded back to reduce friction during shutter operation.

Shutter bottom rail shall be a one-piece, double-wall extrusion with integrated finger pull. Finger pull shall be curved upward with a linear, striated surface to improve operator grip while operating the shutter door. Bottom rail shall have a smooth, contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seal shall be made from Santoprene**– or Owner Approved Equal**; it will be a double-V seal to prevent water and debris from entering compartment. Bottom rail lift bar shall be a one-piece, D-shaped aluminum extrusion with linear striations to improve operator grip during operation. Lift bar shall have a wall thickness of 0.125”. Lift bar shall be supported by no less than two (2) pivot blocks; pivot blocks shall be constructed from Type 66, glass-filled, reinforced nylon for superior strength. Bottom rail end blocks shall have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.

Shutter door shall have an enclosed counterbalance system. Counterbalance system shall be 4” in diameter and held in place by two (2) heavy-duty 18 gauge zinc plated plates. Counterbalance system shall have two (2) over-molded rubber guide wheels to provide a smooth transition from vertical track to counterbalance system; no foam material of any kind shall be permitted or used in this area.

Magnetic door ajar switches shall be provided and installed within the shutter door strike block. Strike block will be mounted to the door track, outside of the compartment. Door switch will be controlled by a magnetic end cap, installed into the shutter lift bar. Door switch will provide a ground signal to a relay or multiplexing device to control compartment lighting and/or warn operator that door is open.

The shutter door assembly shall be manufactured and assembled in the United States, no exceptions.

DOOR TRIM

The trim around the roll-up door shall have a satin finish.

Roll-Up Door Modification - No Pull Strap Required

12 VOLT ELECTRICAL SYSTEM

All wiring and electrical equipment shall meet NFPA 1901, (2016 edition,) and SAE standards.
A master optical warning device switch that energizes all of the optical warning devices shall be provided.

The optical warning system shall be capable of two separate signaling modes during emergency operations. One mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency, and is calling for the right of way. The other mode shall signal that the apparatus is stopped, and is blocking the right of way. Switching of modes shall be controlled by the parking brake.

All wiring to be GXL ultra high-temperature cross link type. Wiring installed by the builder shall be run in protective split loom where exposed to the outside. Where wires pass through body compartments or panels, grommets, snap bushings, or compression fittings shall be utilized.

All wiring harnesses and associated wiring shall be secured with nylon, ultraviolet-resistant cable ties or bolted to the body with cable clamps.

Polyolefin "heat shrink" tubing with adhesive or Deutsch water tight connectors shall be used on all exterior wiring connections.

Flexible, non-conductive polyurethane film shall be sprayed on all terminal studs, relays, starter, batteries, etc., to prevent corrosion.

All wiring shall be protected by automatic reset-circuit breakers which conform to SAE standards. Any required exterior fuses shall be protected by an environmentally-sealed fuse holder.

The breakers shall be selected to prevent wire damage when subjected to extreme current overload. Wiring to be color, function, and/or number coded.

An Innovative Controls power distribution relay board shall be utilized. The distribution board contains independent switching relays with selectable input polarity. Relays can be connected in either their normally-open or normally-closed positions. The relay board features heavy-duty components, visual diagnostics, and load management inputs. The system is user-friendly for trouble shooting.

A wiring diagram for the body electrical system shall be included with the apparatus.

JUNCTION BOX

The electrical junction box for all 12 volt wiring shall be located in a convenient location. It will be recessed into the compartment wall so as not to protrude into the storage area. It shall be protected by a removable access panel.

The compartment shall be sealed and weatherproof. All components in compartment shall have identification tags.

CLEARANCE LIGHTS

All required clearance lights shall be provided, at the rear and on each side of the unit, to meet federal regulations. All lights will be (LED) Light Emitting Diode type with a five (5) year warranty.

On apparatus 30 feet in length or longer, a Trucklite model 60072Y amber LED turn signal light with stainless steel flange– **or Owner Approved Equal–** shall be mounted, one (1) each side, in rear wheel well area at approximately running board height.

LED STEP AREA LIGHTING

Four (4) step area lights shall be provided, one (1) mounted each side on the front compartment face to illuminate the panel running board steps, and two (2) mounted at the rear of the unit to illuminate the rear tailboard step. These lights shall be activated when the parking brake is applied. Whelen 3SCOCDCR series 3.00" round LED lights shall be utilized. Depending on body application, the lights will either be mounted in a rubber grommet or surface mounted with a chrome flange.

HAZARD LIGHT

A red, flashing light shall be located in the driving compartment, and shall be illuminated automatically whenever the apparatus parking brake is not fully engaged and:

- Any passenger or equipment compartment door is open
- Any ladder or equipment rack is not in the stowed position
- A stabilizer system is deployed
- A powered light tower is extended
- Any other device is opened, extended, or deployed that creates a hazard or is likely to cause damage to the apparatus if the apparatus is moved.

The lights shall be marked "DO NOT MOVE APPARATUS WHEN LIGHT IS ON".

LICENSE PLATE LIGHT

One (1) Trucklite model 15055 LED license plate light and bracket– **or Owner Approved Equal–** shall be provided on the rear of the unit.

WHELEN M6FCV4 QUAD CLUSTER REAR DOT LIGHTING

BACKUP LIGHTS – **or Owner Approved Equal**

Two (2) Whelen model M6BUW Super LED backup lights **or owner approved equal**

STOP/TAIL LIGHTS

Two (2) Whelen model M6BTT series Super LED Brake/Tail lights **or owner approved equal**

DIRECTIONAL LIGHTS

Two (2) Whelen model M6T series Super LED arrow directional turn signal lights– **or Owner Approved Equal.**

The backup lights, stop/tail lights, and directional lights along with rear lower level warning lights shall be installed on the lower rear face of the unit and shall be recessed in chrome plated flange.

COMPARTMENT LIGHTS

SoundOff Signal model ECVCLLED43, 43" LED compartment lighting shall be provided in each compartment. The lighting shall be mounted behind the door jamb on one side of the compartment **or owner approved equal**.

All compartment lighting shall be automatic by the opening and closing of the door.

All main apparatus body compartments shall have door ajar switches.

COMPARTMENT LIGHTS

SoundOff Signal model ECVCLLED21, 21" LED compartment lighting shall be provided in each compartment. The lighting shall be mounted behind the door jamb on one side of the compartment **or owner approved equal.**

All compartment lighting shall be automatic by the opening and closing of the door.

All main apparatus body compartments shall have door ajar switches.

BACK-UP ALARM

There shall be electronic beeper that sounds when the truck is placed in reverse. The beeper shall be heard over all engine noise, by persons near or on the truck.

LED GROUND LIGHTING

The apparatus shall be equipped with lighting capable of providing illumination at a minimum level of two (2) foot candle on ground areas within 30.00" of the edge of the apparatus in areas designed for personnel to climb onto the apparatus or descend from the apparatus to the ground level. Lighting designed to provide illumination on areas under the driver and crew riding area exits, which shall be activated automatically when the parking brake is set. Lights shall be installed in a manner that illuminates all walkways and steps for safe operation of the apparatus.

TecNiq E10-WSOO-1 6.00" LED lights– **or Owner Approved Equal –** mounted in a

stainless steel bracket shall be utilized. One (1) light located each side under the panel

running boards.
Two (2) lights mounted under the rear step.

One (1) light located each side under the cab steps.

PUMP COMPARTMENT LIGHT

One (1) SoundOff model ECVCSLLED10-10" LED pump compartment light shall be provided within the pump enclosure. The control switch shall be located on the pump operators **panel or owner approved equal.**

ENGINE COMPARTMENT LIGHT

There shall be a TecNiq E18 high outpout utility light with switch**– or Owner Approved Equal–**, mounted inside engine compartment, to provide sufficient lighting for vehicle maintenance.

CAB SPOTLIGHT

One (1) Blue Eye model OPT-KB-4001 handheld spot light (400,000 candle power) with spot/flood capability shall be mounted in the cab and powered by the cigarette lighter plug in the console **or owner approved equal.**

HOSE BED LIGHTS

There shall be two (2) TecNiq (model E10-W000-1) 6.00" LED lights with clear lens lights**– or Owner Approved Equal–** mounted at the front of the hose bed. The lights will be activated by a swtich located on the pump panel.

DUNNAGE AREA LIGHTS

There shall be two (2) Whelen 3SCOCDCR series 3.00" round LED lights **– or Owner Approved Equal –** provided and mounted in the dunnage area to provide adequate illumination of this area. The lights will be activated when the parking brake is applied.

ELECTRICAL LOAD MANAGER

The apparatus shall be equipped with an Innovative Control Electrical Load Manager (ELM) for performing electrical load management. The ELM shall have 16 programmable outputs to supply warning and load switching requirements. Outputs 1-12 shall be independently programmable to activate during the scene mode, the response mode, or both.

These outputs can also be programmed to activate with the ignition or master warning switch, or to sequence and shed along with the priority. Output 13 shall be designated to activate a fast idle system. Output 14 shall provide a low voltage warning for an isolated battery. Output 15 is a user configurable output and shall be programmable for activating between 10.5 and 15 volts. Output 16 shall provide a low voltage alarm that activates at the NFPA required 11.8 volts.

The ELM shall have a digital display to indicate system voltage in normal operation mode and also indicate the output configuration during programming mode. The ELM shall be protected against reverse polarity and

shorted outputs and be enclosed in a metal enclosure to enhance EMI/RFI protection. The ELM shall have an operating temperature range of -40C to +105C (-40F to +220F).

WHELEN **– or Owner Approved Equal–**NFPA APPROVED UPPER

LEVEL LIGHT PACKAGE ZONE A - FRONT UPPER

A Whelen Freedom IV model F4N0VLED 60" lightbar shall be mounted centered on the front of the cab roof. The lightbar shall be 60.00 inches in length. The lightbar shall feature four (4) corner Red Linear-LEDs and four (4) front Linear LEDs (2) Red & (2) Clear lights. The clear lights shall be disabled when the parking brake is engaged **or owner approved equal.**

ZONE B & D - SIDE UPPER

Two (2) Whelen M9 Super LED lights with chrome bezels **– or Owner Approved Equal–**will be mounted one each side on the upper rear side corners of the body.

ZONE C - REAR UPPER

Two (2) Whelen M9 Super LED lights with chrome bezels **– or Owner Approved Equal–**will be mounted on the upper rear of the body.

UPPER LEVEL LIGHT LENS COLOR

The upper level lights shall have red lenses.

WHELEN or **Owner Approved Equal**

LOWER LEVEL LIGHTING

ZONE A - LOWER

Two (2) M7 series Super LED lights with chrome bezels mounted on the lower portion of the front grille **or owner approved equal.**

ZONE B & D- SIDE LOWER

Two (2) M4 series Super LED lights with chrome bezels mounted one (1) each side on the front lower corner of the cab fenders **or owner approved equal.**

Two (2) M6 series Super LED lights with chrome bezels mounted one (1) each side in the rear body fender area **or owner approved equal.**

ZONE C - LOWER

Two (2) M6 Super LED lights mounted on the lower rear of the apparatus in M6FCV4 chrome housing **or owner approved equal.**

LOWER LEVEL LIGHT LENS COLOR

The lower level lights shall have red lenses.

ARROW STICK

One (1) Whelen TAZ86 LED Traffic Advisor light– **or Owner Approved Equal –** shall be mounted center rear of unit. The TADCTL1 control head shall be mounted in the chassis cab. 1.74" high x 2.17" deep x 36.00" long

The unit shall include eight (8) Linz6 LED lamps with amber lens **or owner approved equal.**

RECESS MOUNT DIRECTIONAL LIGHT

The directional light shall be recess mounted for protection of the light.

VOYAGER OBSERVATION SYSTEM or **Owner Approved equal**

The apparatus shall be equipped with a Voyager Observation system or **Owner Approved equal**. The system shall help prevent common backing accidents by allowing the driver to see what is behind the apparatus. The system shall include a Voyager AOM713WP **or Owner Approved equal** 7" Color Tri-View heavy duty Monitor mounted in the cab and a VCCS130 Voyager or Owner Approved equal color camera shall be mounted on the rear of the vehicle **or owner approved equal**.

Monitor System Includes:
7" Wide Format, Heavy Duty Color LCD Panel
Waterproof housing
Backlit controls
Integrated audio speaker
NTSC and PAL video signal compatible
Three camera (A/V) inputs
Manual (pushbutton) or automatic (trigger) source selection
Turn-signal (pulsed DC) compatible trigger inputs (AV2, AV3)
Auto power on (standby)
Day/Night brightness modes
On Screen Display (OSD) for AV source, picture adjustment and volume level
Non-volatile memory for picture and volume adjustment settings
Anti-glare/Anti-scratch protective lens
Removable sun-visor included

Camera System includes:
Built-in microphone.
LED enhanced low-light performance and image orientation selector switch.

WHELEN 295SLSA1 ELECTRONIC SIREN AMPLIFIER **or owner approved equal**

A Whelen Model 295SLSA1 electronic siren amplifier **– or Owner Approved Equal–**shall be provided and installed in the cab within reach of the officer and driver.

Standard features include Radio Rebroadcast, Public Address, Manual, Wail, Yelp, Airhorn, and Piercer tones. PTT (Push To Talk) switch on unidirectional microphone over-rides all siren functions. All siren functions are backlit in a soft, non-glare green for ease of nighttime visibility. Contemporary styling complements most Whelen power controls and Traffic Advisor Control Consoles for proper aesthetic stacking. An adjustable bail bracket allows mounting in a variety of positions. Each model is mounted on a slide out chassis with an integral quick disconnect plug for ease of maintenance or replacement. Park Kill feature, disables the siren when the vehicle is in park. Volume control knob on faceplate standard.

Selectable 100 or 200 watt output, standard.
Si-Test®, silent self-diagnostic.
5 year warranty on amplifier.
Size: 2-1/2" (64mm) H x 6" (152mm) W x 6-7/8" (175mm) D

SIREN SPEAKER

One (1), 100 watt siren speaker shall be recess mounted in the left side of the front bumper.

Q2B SIREN **or owner approved equal**- RECESS MOUNT

One (1) Federal Signal Q2B siren model #Q2B-012NNSD electro-mechanical siren shall be provided **or owner approved equal**. The Q2B siren or **Owner Approved equal** shall be a streamlined, chrome-plated siren, designed to provide reliable and long-life operation. The electro-mechanical siren shall produce the distinctive Q2B **or owner approved equal** sound that is a registered trademark of Federal Signal, and shall be provided with a heavy duty clutch and an electric brake. The Q2B siren or **owner approved equal** shall measure 10.5” high x 14” long x 10” deep and shall produce 123 decibels at ten feet. The siren shall operate off the vehicles 12V system.

The siren shall be active only when the master warning switch is on, to prevent accidental engagement. A momentary siren brake rocker switch shall be provided in the switch panel on the dash.

The motor of the Q2B siren **or owner approved equal** shall be recess-mounted in the right side of the front bumper. The front of the siren shall extend approximately 4.50" forward, beyond the end of the bumper.

FOOT SIREN SWITCH

There shall be a Linemaster SP-491-S119 **– or Owner Approved Equal–**momentary floor mounted foot switch provided for Q2B Siren operation or **Owner Approved Equal** and installed on both the driver and passengers side floor in the cab.

AIR HORNS - ON SIDE HOOD

Two (2) Grover Stutter tone air horns **– or owner Owner Approved Equal –**will be mounted one (1) each side on the side of the hood.

AIR HORN CONTROL - FOOT SWITCH

There shall be a Linemaster SP-491-S119 momentary floor mounted foot switch **– or Owner Approved Equal –** provided for Air horn operation and installed on the officers side floor in the cab.

HORN SIREN SWITCH

There shall be a three-way selector switch provided, which shall switch from electric horn to air horn, or to siren. The electric horn shall sound by default when the selector switch is in either position to meet FMCSA requirements.

SCENE LIGHTS

Six (6) Whelen model M9LZC Super-LED, 24 diode (4-5/16" high x 6-3/4" wide) white scene lights**– or Owner Approved Equal –** will be installed on the body. The lights feature inner optics that direct light downward.

Two (2) located each side of the body, one (1) at the front and one (1) at the rear, and two (2) located on the rear face of the unit.

Lights will be controlled by three individual switches located in the cab. Rear lights will also be activated when unit is put into reverse.

LED TELESCOPIC SCENE LIGHT

Whelen Pioneer LED scene lights, model PFH1P**– or Owner Approved Equal –** side mount push up telescopic light shall be installed. The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 2 3/4" offset. Wiring shall extend from the pole bottom with a 4' retractile cord.

The lamphead shall generate 10,000 lumens of light. The lamphead angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamphead shall be no more than 4.75" high by 8.25" wide by 3.25" deep and have a heat resistant handle. The lamphead and mounting arm shall be powder coated. The LED scene light shall be for fire service use.

Two (2) lights will be provided and mounted one each side on the front of the body.

Lights will be controlled by two individual switches located in the cab labeled "Left Scene" & "Right Scene."

XANTREX **– or Owner Approved Equal –**INVERTER

A Xantrex 2000 watt Freedom X200 inverter **– or Owner Approved Equal –**shall be provided and mounted the right front upper compartment and wired to the chassis battery system.

It shall be wired to a 20 amp household duplex AC receptacle located near the inverter.

OUTLETS

Two (2) 120 volt 20 amp. twist-lock outlet (NEMA L5-20) or **Owner Approved Equal** with weatherproof cover shall be provided with wiring in flexible conduit to the inverter and shoreline.

Location shall be: Customer specified body compartments.

PAINT AND PREPARATION

All metal surfaces will be properly sanded, prepared and finished ready for our Axalta Coating Systems **– or Owner Approved Equal –**pretreatment. This is done to insure optimum adhesion, corrosion resistance, and durability.

After pretreatment, 1220S Axalta Coating Systems 5000 URO primer filler**– or Owner Approved Equal –** is applied designed to fill any minor surface defects and provide an adhesion layer between the pretreatment and the Imron Base Coat/Clear Coat**– or Owner Approved Equal**. This is also applied to improve color gloss, retention, and durability of the paint.

Next the URO primer will be sanded to a smooth prepainting surface. The surface will be decontaminated and prepared for application of High Solids Axalta Coating Systems Productive Base Coat/Clear Coat finish **– or Owner Approved Equal–**to complete the finished paint process.

A full inspection is performed of Defects, Depth Imagery, Gloss, Film Build, Color Match and Texture, all to meet or exceed Axalta Coating Systems**– or Owner Approved Equal –** OEM fleet finish specifications.

Body assemblies that cannot be finish painted upon assembly shall be painted prior to finish assembly. All doors are removed and painted separate from the body.

Prior to reassembly and reinstallation of lights, handrails, door hardware, and any miscellaneous items; a gasket material or silicone sealant shall be applied to prevent damage to the finish painted surfaces and to protect against electrolysis between dissimilar metals.

Touch up paint shall be provided for each color paint used.

South Hamblen County Vol. Fire Dept.

The complete apparatus body will be painted a single color to match the color of the cab. The cab shall remain as painted from the chassis supplier.
Paint Color _____ - Paint #_____

CUSTOMER IS CONSIDERING A COLOR CHANGE FROM THE PREVIOUS UNIT

LETTERING

The truck will be lettered by the customer's lettering contracter after delivery.

REFLECTIVE STRIPING

A 6" wide white reflective stripe shall be applied to the unit in a straight line.

Per NFPA 15.9.3.1 this shall include at least 50 percent of the cab and body length on each side, excluding the pump panel areas, and at least 25 percent of the width of the front of the apparatus.

Z ON REFLECTIVE STRIPING

Two (2) pairs of "Z's", one pair on each side of body, shall be provided on the reflective striping.

The Zs will have a simulated shadow crating a folded-ribbon effect.

REFLECTIVE MATERIAL - INTERIOR CAB DOOR

The cab doors shall have a minimum of 96 square inches of reflective material affixed to the inside of each door per NFPA 1901 14.1.6

REFLECTIVE CHEVRON - NFPA 15.9.3.2

50 percent of the rear-facing vertical surfaces, visible from the rear of the apparatus, shall be equipped with retroreflective striping in a chevron pattern sloping downward and away from the centerline of the vehicle at an angle of 45 degrees. Each stripe shall be 6" in width.

Chevron shall be applied to the rear faces of the left and right side compartments. The recessed area of the rear face shall be clad in aluminum diamond plate.

Stripe Colors will be Red & Yellow.

EQUIPMENT

The following equipment shall be provided along with any necessary mounting brackets.

NFPA EQUIPMENT CLARIFICATION

Any equipment specified in the "Minor Equipment" section (e.g. hose, nozzles, adapters, AED, traffic cones, traffic safety vests, etc.) of NFPA 1901 for each apparatus classification which is not specified in this proposal will be considered to be customer supplied.

SUCTION HOSE

Two (2) Harrington 6" x 10' light weight PVC suction hose with male and 6" long handled female couplers**– or Owner Approved Equal**.

SUCTION HOSE STRAINER

One (1) South Park #BS4522AC, 6.00" barrel strainer will be provided and mounted in customer specified location **or owner approved equal.**

14' ROOF LADDER

One (1) Alco-Lite model #PRL-14, 14' roof ladder **– or Owner Approved Equal –**shall be provided. Ladder shall consist of a single section aluminum ladder with folding steel hooks on one end and steel spikes on the other end. Ladder shall meet or exceed the latest NFPA standards.

24' EXTENSION LADDER

One (1) Alco-Lite #PEL-24, 24' extension ladder**– or Owner Approved Equal** Ladder shall consist of 2 aluminum sections. Ladder shall meet or exceed the latest NFPA standards.

FLAT HEAD AXE

One (1) Council Tool (C60F) or **Owner Approved Equal** 6 lb steel flat head axe with a fiberglass handle shall be supplied and mounted in customer specified location.

PICK HEAD AXE

One (1) Council Tool (C60P) **or owner approved equal** 6 lb steel pick head axe with a fiberglass handle shall be supplied and mounted in customer specified location.

8' FIBERGLASS PIKE POLE

One (1) Duo-Safety Type FP, **or owner approved equal** 8' fiberglass handle pike pole shall be provided consisting of a 8' hollow fiberglass pole 1-3/4" OD with a painted steel pike riveted to the pole.

PIKE POLE

One (1) Duo-Safety Type FP, **or owner approved equal** 10' fiberglass handle pike pole shall be provided consisting of a 10' hollow fiberglass pole 1-3/4" OD with a painted steel pike riveted to the pole.

20LB ABC EXTINGUISHER

One (1) Amerex model FE-423 w/#810 bracket, 20 LB ABC Stored Pressure Dry Chemical Extinguisher **– or Owner Approved Equal–**shall be provided and mounted in customer specified location.

2-1/2 GALLON PRESSURE WATER EXTINGUISHER

One (1) Amerex model FE-240 w/810 bracket, 2-1/2 gallon pressure water extinguisher **–or Owner Approved Equal–**shall be provided and mounted in customer specified location.

WHEEL CHOCKS

Two (2) Zico AC32 wheel chocks **– or Owner Approved Equal–**will be provided and mounted under the left front compartment.

HAND LIGHT

Four (4) Steamlight Fire Vulcan model #44451 hand held LED lights with 12 volt chargers**– or Owner Approved Equal–** will be provided and mounted in the forward part of the L1 high side.

AIR PACK BRACKETS

Four (4) Ziamatic KD-UH-6-SF air pack brackets **– or Owner Approved Equal–**shall be supplied and mounted in the L2 high side compartment.

SPANNER WRENCH SET W/HYDRANT WRENCH

One (1) set of Kochek style K45-3-KBR spanner wrenches **– or Owner Approved Equal–**shall be provided and mounted in customer-specified location. Includes (1) hydrant wrench and (2) spanner wrenches with mounting bracket.

Location:

SPANNER WRENCH SET

One (1) set of Kochek style K46-2-KBR spanner wrenches **– or Owner Approved Equal–**shall be provided and mounted in customer specified location. Includes (2) spanner wrenches with mounting bracket.

Location:

HEADSET SYSTEM

A Firecom wireless headset communication system for two (2) people**– or Owner Approved Equal –** shall be provided and installed. The system will include two (2) radio interface, two (2) under helmet wireless headsets, one (1) basestation, and two (2) headset hangers.

SAFETY FIRE VEST

The NFPA required Safety Vest will be supplied and installed by the purchaser before the truck is placed into service.

TRAFFIC CONES

The NFPA required traffic cones will be supplied and installed by the purchaser before the truck is place into service.

AUTOMATIC EXTERNAL DEFIBRILLATOR (AED)

The NFPA required AED will be supplied and installed by the purchaser before the truck is placed into service.

ADVERTISEMENT FOR BIDS

Project No. 16103

Owner: Hamblen County

Separate sealed bids for New Fire Engine for South Hamblen County Fire Department will be received by Hamblen County at the office of Finance Department until 3:00 pm o'clock /P.M., ./E.S.T. August 22, 20 24, and then at said office publicly opened and read aloud.

Bids must be submitted in a sealed envelope, bearing on the outside the name and address of the Bidder and the name of the project: "2023 CDBG, South Hamblen County Fire Engine. If forwarded by mail, the sealed envelope must be enclosed in another envelope.

The Information for Bidders, Form of Bid, Specifications, and, and other contract documents may be examined or obtained at the following:

The owner reserves the right to waive any informalities or to reject any or all bids.

No bidder may withdraw their bid within 60 days after the actual date of the opening thereof.

Hamblen County is an Equal Opportunity Employer. Hamblen County prohibits discrimination on the basis of race, color, religion, sex, or national origin, in the admissions or access to, or treatment, or employment in its programs or activities.

Date: 7/8/2024

INFORMATION FOR BIDDERS

1. Receipt and Opening of Bids:

The Hamblen County (herein called the "Owner), invites bids on the form attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the Owner at the office of Finance until 3:00 PM o'clock ./P.M., /E.S.T, August 22, 20 24, and then at said office publicly opened and read aloud. The envelopes containing the bids must be sealed, addressed to Barbara Horton at Hamblen Co. Courthouse, 511 W.North Str. Morristown, 37814 and designated as bid for 2023 CDBG, South Hamblen County Fire Engine..

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 60 days after the actual date of the opening thereof.

2. Preparation of Bid:

Each bid must be submitted on the prescribed form and accompanied by Certification of Bidder Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion and the Iran Divestment Act Certification. All blank spaces for bid prices must be filled in, in ink or typewritten, in both words and figures, and the foregoing Certifications must be fully completed and executed when submitted.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, his/her address, the name of the project for which the bid is submitted.

3. Method of Bidding:

The Owner invites the following bid(s):

2023 CDBG, South Hamblen County Fire Engine.

TOTAL AMOUNT MUST INCLUDE ALL APPLICABLE COST, INCLUDING BUT NOT LIMITED TO SHIPPING, FREIGHT, DELIVERY, AND ASSEMBLY. PAYMENT BY INVOICE.

4. Qualification of Bidder:

The Owner may make such investigations as s/he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be accepted.

5. Time of Completion and Liquidated Damages:

Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" or Purchase Order from the Owner and to fully complete the project within N/A consecutive calendar days thereafter. Bidder must agree also to pay as liquidated damages, the sum of $ N/A for each consecutive calendar day thereafter.

6. Addenda and Interpretations:

No interpretation of the meaning of the specifications or other pre-bid documents will be made to any bidder orally.

All requests for such interpretation should be in writing addressed to Barbara Horton at Hamblen Co. Courthouse and to be given consideration must be received at least five days prior to the date fixed for the opening of bids. All such interpretations and any supplemental instructions will be not later than two days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his/her bid as submitted. All addenda so issued shall become part of the bid submission.

7. Laws and Regulations:

The bidder's attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

8. Method of Award - Lowest Qualified Bidder:

After receiving bids and determining the amount of funds estimated by the OWNER as available to finance the contract, the OWNER will award the contract based upon the lowest and most responsive bid. The lowest responsible bidder will be determined upon the basis of the lowest base bid or lowest base bid combined with alternates (additive or deductive) and meeting the bid specifications. If the contract is to be awarded based on the lowest base bid with alternates, alternates will be accepted in the numerical order in which they are listed in the Form of Bid. The OWNER may not negotiate with any Bidder to reduce or alter the submitted bid.

9. Obligation of Bidder:

At the time of the opening of bids each bidder will be presumed to have to have read and to be thoroughly familiar with the plans and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect of his/her bid.

All vehicles and equipment submitted in the bid must MEET OR EXCEED the OWNER'S specifications and MUST meet all applicable ISO, NFPA, or other state industry standards.

Charges or terms for delivery of apparatus must be clearly stated on the bid form. Apparatus must be able to be delivered within the terms stated in the "*Time of Completion and Liquidated Damages*", under its own power, and will be subjected to tests to determine its performance and reliability as a condition of sale.

BIDDER discounts and terms, if any, must be clearly stated in the submitted bid.

BID FOR UNIT PRICE CONTRACTS

Place Hamblen County Courthouse

Date _____

Project No. 16103

Proposal of _____ (hereinafter called "Bidder")[1]
a corporation, organized and existing under the laws of the State of _____,
partnership, or an individual doing business as _____.
To the _____ (hereinafter called "Owner")

The Bidder, in compliance with your invitation for bids for the purchase of a _____, having examined the specifications with related documents, and being familiar with all of the conditions related to the proposed project including the availability of materials and labor, hereby proposes to deliver all equipment in compliance with the specifications, within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in written "Notice to Proceed" or Purchase Order from the Owner and to fully complete the project within _____ consecutive calendar days thereafter as stipulated in the specifications. Bidder further agrees to pay as liquidated damages the sum of $_____ for each consecutive calendar day in excess of the agreed upon time period of completion and delivery.

[1] Insert corporation, partnership or individual as applicable.

Bidder acknowledges receipt of the following addendum:

_____

_____

_____

Bidder agrees to perform all the work described in the specifications and shown on the plans, for the following unit prices:

ITEM NO.	EST. QTY.	DESCRIPTION	UNIT PRICE (Each)	Total
1	_____	_____	_____	_____
			Dollars & Cents	Dollars & Cents
		_____	($_____)	($_____)
2	_____	_____	_____	_____
			Dollars & Cents	Dollars & Cents
		_____	($_____)	($_____)
3	_____	_____	_____	_____
			Dollars & Cents	Dollars & Cents
		_____	($_____)	($_____)
			TOTAL OF BID	$_____

Amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will supersede.

The above unit prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance, etc., to cover the finished work.

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

The bidder agrees that this bid shall be good and may not be withdrawn for a period of 60 days after the scheduled closing time for receiving bids.

Respectfully submitted:

By: _____
(Signature)

_____ _____
(Name & Title) *(Business Address, State, & Zip Code)*

BID FOR LUMP SUM CONTRACTS

Place Hamblen County Courthouse

Date _____

Project No. 16103

Proposal of _____ (hereinafter called "Bidder") (a

_____corporation/a partnership/an individual doing
(State) STRIKE OUT INAPPLICABLE TERMS
business as _____)
To the _____ (hereinafter called "Owner")

The Bidder, in compliance with your invitation for bids for the purchase of a

_____
having examined the specifications with related documents, and being familiar with all of the conditions related to the proposed project including the availability of materials and labor, hereby proposes to deliver all equipment in compliance with the specifications, within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in written "Notice to Proceed" or Purchase Order from the Owner and to fully complete the project within _____ consecutive calendar days thereafter as stipulated in the specifications. Bidder further agrees to pay as liquidated damages the sum of $_____ for each consecutive calendar day in excess of the agreed upon time period of completion and delivery.

Bidder acknowledges receipt of the following addendum:

_____
_____

BASE PROPOSAL: Bidder agrees to perform all the work described in the specifications and shown on the plans for the ($_____) (Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in words will supersede.)

ACKNOWLEDGEMENT REGARDING BIDDER SAM REGISTRATION

Pursuant to 2 CFR Parts 183 and 215 and the requirement of the U.S. Department of Housing and Urban Development (HUD), contractors procured directly by grantees, sub-grantees, and/or sub-recipients of HUD funds, including CDBG are required to have an active registration in the System of Award Management (SAM). This document shall be completed and submitted as part of the bid proposal.

1. By submitting this proposal, the prospective bidder acknowledges that it must have an active SAM UEI (Unique Entity ID) to be awarded this contract and that without an active SAM UEI the bidder's proposal may be disallowed.

2. By submitting this proposal, the prospective bidder certifies neither it, its principals nor affiliates, is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

3. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that an erroneous certification was rendered, in addition to other remedies available to the Federal Government, the Department or agency with which this transaction originated may pursue available remedies.

4. Further, the prospective bidder shall provide immediate written notice to the person to which this proposal is submitted if at any time the Participant learns that this certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

5. By submitting this proposal, it is agreed that should the proposed covered transaction be entered into, the prospective bidder will not knowingly enter into any lower-tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction unless authorized by the agency with which this transaction originated.

6. It is further agreed that by submitting this proposal, the prospective bidder will include Certification of Subcontractor Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion without modification, in all lower-tier covered transactions and in all solicitations for lower-tier covered transactions.

Provide the following information as detailed in the prospective bidder's SAM registration:

Entity Name: _____

Address: _____

City: _____ State: _____ Zip: _____

SAM Entity ID: _____ Expiration Date: _____

Active Exclusions: ☐ Yes ☐ No

IRAN DIVESTMENT ACT

In compliance with the Iran Divestment Act (State of Tennessee 2016, Public Chapter No. 817), which became effective on July 1, 2016, certification is required of all bidders on contracts over $1,000.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party hereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to T.C.A. § 12-12-106.

I affirm, under the penalties of perjury, this statement to be true and correct.

_____ _____

Date Signature of Bidder

_____ _____

Company

A bid shall not be considered for award nor shall award be made where the foregoing certification has been complied with; provided, however, that if in any case the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefor. The **County of** Hamblen may award a bid to a bidder who cannot make the certification, on case-by-case basis, if:

1. The investment activities in Iran were made before July 1, 2016, the investment activities in Iran have not been expanded or reviewed on or after July 1, 2016, and the person has adopted, publicized, and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
2. The **County of** Hamblen makes a determination that the goods or services are necessary for the **County of** Hamblen to perform its functions and that, absent such an exemption, the political subdivision will be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

CERTIFICATION OF NON-BOYCOTT OF ISRAEL

The Bidder certifies that it is not currently engaged in, and will not for the duration of the contract engage in, a boycott of Israel as defined by Tenn. Code Ann. § 12-4-119. This provision shall not apply to contracts with a total value of less than two hundred fifty thousand dollars ($250,000) or to contractors with less than ten (10) employees.

According to the law, a boycott of Israel means engaging in refusals to deal, terminating business activities, or other commercial actions that are intended to limit commercial relations with Israel, or companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel to do business, or persons or entities doing business in Israel, when such actions are taken:

1) In compliance with, or adherence to, calls for a boycott of Israel, or

2) In a manner that discriminates on the basis of nationality, national origin, religion, or other unreasonable basis, and is not based on a valid business reason. Tenn. Code Ann. § 12-4-119.

I certify this statement to be true and correct.

_____ _____
Bidder Name Printed Date

_____ _____
Signature of Bidder Company